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By Alan Moncrieff, M.D., F.R.C.P. Lond.

PHYSICIAN TO THE CHILDREN'S DEPARTMENT, MIDDLESEX HOSPITAL; PHYSICIAN TO THE OUT-PATIENTS, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET; ASSISTANT PÆDIATRICIAN, QUEEN CHARLOTTE'S HOSPITAL

II.—DIAGNOSIS

Just as Benjamin Hoadley was a pioneer in seeking the causes of failure of respiration in relation to diseases of the thoracic organs, so another distinguished fellow of this college, and president for a few weeks before his death in March, 1750, James Jurin,[1] was one of the earliest workers to study the measurement of the respiratory volumes, a method of investigating respiratory failure still employed to-day. His studies and interest were primarily of a mathematical nature and the search still continues to find a set of figures which shall express the degree of respiratory failure with the precision characterising, for example, the biochemical conception of renal failure.

It is comparatively easy to decide, broadly, whether respiration is grossly inefficient or not, but more difficult to detect reduction in the respiratory reserves which may be called upon in some physical effort or in association with an operation upon the thorax. Dyspnœa or shortness of breath is a subjective sensation which is hard to assess and as already indicated it is an unsatisfactory term to use. The feeling of difficulty with breathing arises as the size of each breath approaches the limits represented by the vital capacity. Polypnœa or hyperpnœa may occur without any feeling of difficulty, as for example when a patient with a normal vital capacity breathes more rapidly or with a greater depth because of the stimulus of excessive acid radicals at the centres, as in diabetic coma. Yet the same type of central stimulation may occur with clear evidence of difficulty in breathing, as in severe degrees of respiratory failure in the new-born, where no doubt the factor of delayed expansion of the lungs (i.e., diminished vital capacity) enters into the problem. Campbell,[2] in a recent study on the respiratory exchange in heart disease, concludes in much the same sense that the main factor in the production of the feelings of dyspnœa in cardiac failure is the smaller margin present between the depth of breathing and the maximum vital capacity as compared with normal subjects. It should also be noted that dyspnœa in the sense of a consciousness of some difficulty in breathing is not necesssarily pathological, since it is seen in normal subjects after exercise.

Since it is impossible to record the degree of distress subjectively experienced, the most hopeful line of approach would appear to be an attempt at measurement of the factors concerned, such as the ventilation, depth of breathing, and vital capacity. If satisfactory normals could be established, then respiratory failure could be expressed in terms of percentage of the normal for the individual patient. The efficiency or inefficiency of respiration could then be established irrespective of the type of failure present. It is not difficult to determine the causative factors, as outlined in my first lecture, present in a particular case. Physical examination of the nervous, cardiovascular, and respiratory systems will generally indicate clearly the ætiological factors concerned, while the history of attempted suicide with coal-gas or an overdose of morphine will indicate further types of disturbance. In acute respiratory failure all that is necessary is prompt diagnosis of the probable cause followed by appropriate treatment. Of this I shall have more to say in Lect. III. It is in the more chronic cases that difficulty arises in assessing the degree of failure and this point must be discussed in greater detail.

CYANOSIS

Before proceeding to an analysis of methods available for estimating respiratory efficiency, it is necessary to interpose a note on cyanosis, for there is much misunderstanding with regard to this condition. In the first place the occurrence of cyanosis depends upon the absolute amount of reduced hæmoglobin present in the blood, the amount of oxygenated hæmoglobin being of no direct significance. The blue colour of the skin is due essentially to the presence of reduced hæmoglobin in the capillaries. The amount of reduced hæmoglobin must reach a limit of 5 g. per 100 c.cm. before cyanosis appears (see especially Lundsgaard and van Slyke [3]) and this may happen without any direct concurrence of respiratory failure. In polycythæmia, for example, the amount of total hæmoglobin may be greater than normal (as well as an increased blood volume) so that even with excellent conditions of aeration in the lungs more than 5 g. of hæmoglobin per 100 c.cm. remain reduced and cyanosis is present without any respiratory failure. The opposite condition of a reduction in the total amount of hæmoglobin produces a situation which is fraught with danger as regards respiratory failure. Cyanosis of an anæmic patient is impossible if the hæmoglobin present is in such small quantity that the limit of 5 g. of reduced hæmoglobin can never be reached. It follows that severe respiratory failure may develop in such a patient, with a fatal degree of anoxæmia, without the warning sign of cyanosis. The inexperienced anæsthetist may have passed the limits of safety with an anæmic patient before this is realised.

It follows that while some of the factors concerned in the production of cyanosis are also those responsible for respiratory failure (inefficient ventilation, diminished oxygen in the inspired air, circulatory disturbances in the lungs, disease of the alveolar cells) the conditions do not run parallel. In those instances where blood passes through the lungs unaerated it is calculated that probably at least one-third of total aerating tissue must be affected before cyanosis appears in an individual with a normal total hæmoglobin content of the blood. Obvious difficulty with breathing and signs of respiratory failure such as reduction of vital capacity may be present long before this. An easy example may be used to drive this point home. In the new-born it is recognised that the so-called "white asphyxia" represents a more serious condition than "blue asphyxia." In other words the baby with the severest type of respiratory failure is less cyanosed. There are clearly other factors concerned in this connexion, such as circulatory failure and "shock," with a possible

* The Goulstonian Lectures for 1935, delivered before the Royal College of Physicians of London on March 7th, 12th, and 14th. Lecture I. appeared in our last issue and Lecture III. will be published next week.

stagnation of blood in the splanchnic pool so that the total amount of circulating hæmoglobin in the vessels of the skin may be temporarily diminished, resembling the condition of the anæmic patient. Even in the baby with "white asphyxia" evidence of a grey-bluish tint in the lips and nail beds is apparent, but the degree of cyanosis present bears no relation to the degree of failure of respiration. It may be, as Barcroft has shown (see Lect. I.), that the property of fœtal hæmoglobin to shed oxygen with difficulty may militate against the appearance of cyanosis in the new-born since the production of reduced hæmoglobin would be thus diminished. This would still further decrease any possible value that cyanosis as a sign of respiratory failure might have.

Tests for Respiratory Efficiency

The history of the search for tests of respiratory efficiency and details of the methods available have recently been set out elsewhere [4] so that a comparatively brief account only will be included here. The tests I have used in nearly 100 patients can be classified as routine clinical measures, "anatomical" measurements of the respiratory volumes, "physiological" measurements of ventilation, and estimation of the expiratory force and sustaining power by means of the mercury U-tube.

ROUTINE CLINICAL MEASURES

These include noting the respiratory rate and type, the position assumed by the patient, the number of pillows required for comfort, movement of the alæ nasi, physical signs of disease in the lungs or other organs, X ray examination of the lungs, and certain special tests in specified disorders such as the sedimentation-rate of the red blood-cells in pulmonary tuberculosis.

"ANATOMICAL" MEASUREMENTS

This part of the tests consists essentially of estimating the size of the vital capacity and its component parts. The measurement of the maximum expiration possible after the maximum inspiration—that is the vital capacity—in its simplest form consists in getting a patient to inspire fully and then expire into some apparatus where the size of expiration can be measured. A modified household gas-meter serves the purpose quite well, but a more complicated type of spirometer is frequently used, and in the series of tests recently carried out at the Middlesex and Brompton Hospitals I have used a recording spirometer, measuring the vital capacity as one of several observations made during the course of the investigation of a patient. This has also enabled me to measure the size of the complementary, tidal, and reserve air. Measurement of the residual air, left in the lungs after a maximum expiration, is possible if some inert gas such as hydrogen is breathed, and samples of expired air are carefully analysed; but the method is not without some discomfort to the ill patient, and the experiment is so far removed from physiological conditions that I doubt its value or practicality in any routine work in the wards. The vital capacity of each lung has also been recorded separately by certain workers, using a double bronchoscope,[5 6] but this again is outside the range of routine tests. The determination of the total vital capacity is, as has been indicated, a relatively simple matter, but difficulty arises when it is sought to express the findings as a percentage of normal, for it is difficult to find agreement on what determines a normal vital capacity or how it can be calculated.

From the days of Hutchinson, whose type of spirometer devised nearly ninety years ago is still popular, there have been many attempts to correlate vital capacity with other physical measurements such as weight, height (standing or sitting), body surface, and circumference of the chest, while other factors also enter into consideration such as the sex, age, occupation, physical fitness of the patient, and posture during the test. With so many variables it is not surprising that the statistical experts [7] are inclined to doubt the possibility of calculating normal vital capacity. A very simple consideration put forward by Treadgold [8] indicates one of the many fallacies attending the use of any method of calculating vital capacity involving the weight of the patient. According to many of the tables available for the purpose an increasing weight means an increasing vital capacity and vice versa. Yet it is obvious that increase of weight in middle age is more likely to be associated with a diminished vital capacity. With the ill patient there is also the difficulty that the actual weight may be considerably below the normal for age and height. Ought the vital capacity to be calculated on the expected weight or the actual weight? Most workers would take an average of the vital capacity calculated for one or more physical measurements as the "normal," making allowances as Dreyer [9] has done for sex and occupation. Even then the precise significance of the measurement is not clear. Meyers [10] has shown that in febrile conditions, apart from disease of the heart or lungs, the vital capacity is little affected, while fatigue and general muscular weakness have likewise comparatively little effect upon it (Peabody and Sturgis [11]). Yet when the measurement is applied to pulmonary tuberculosis, it is generally found—as, for example, in a recent study by Beaumont [12]—that the reduction of vital capacity is more closely related to the activity of the disease than to its extent.

My own tests showed vital capacity readings running more or less parallel with general clinical estimates of respiratory efficiency and diminishing as this got worse, but there were various exceptions which throw doubt upon the value of the tests. For example, one patient, a muscular young man with complete collapse of one lung following spontaneous pneumothorax, had a vital capacity reading above the calculated normal for his age, weight, and sitting height. Yet his respiratory efficiency was clearly impaired when judged clinically or by other tests. On the other hand, a patient of similar physical build with pulmonary tuberculosis and an artificial pneumothorax collapsing one lung showed a vital capacity only 55 per cent. of his calculated normal, while his other tests gave results falling within normal limits. His death six months later clearly indicated that the disease had been active at the time of the tests. From the strict "anatomical" point of view the two patients were very similar, and it must be concluded that what at first sight appears to be a simple volumetric measurement of the area of pulmonary space available is in reality dependent upon many complex factors. It is clear that other tests must be used in conjunction with estimation of the vital capacity to detect early respiratory failure in all cases. An interesting development of which I have only recently learned is an attempt by workers ([12a]) at Rochester, New York, to correlate measurements of the lung capacity with the "radiological chest volume," calculated from radiological and external chest measurements. This appears to get over some of the difficulties raised above.

"PHYSIOLOGICAL" MEASUREMENTS

Various workers have endeavoured to attach a functional significance to vital capacity readings by linking them up to other measurements such as the respiratory rate, minute volume, residual air or maximum tidal air obtained by forced overbreathing under the stimulus of the expired carbon dioxide. This does not do much more than introduce yet another variable into consideration, and the resulting formulæ have a spurious look of accuracy. The essential function of the lungs is ventilation—the obtaining of oxygen for the blood and the getting rid of carbon dioxide. Measurement of the effectiveness of this ventilation ought to supply an easy test of respiratory efficiency. Yet there are at once several difficulties to be considered. In the first place it is a fundamental principle that, other things being equal, the pulmonary ventilation is proportional to the metabolic rate, and before any measurement of the minute volume, for example (that is the amount of air breathed in per minute or tidal air multiplied by rate of respiration per minute), can have any value as a test of respiratory efficiency it must be related to some fixed metabolic standard. This has been done in various ways, and the method with which I have had most experience [13] is expressed as the "ventilation equivalent for oxygen," being the amount of air which has to be inspired to yield 100 c.cm. of oxygen to the body. In the normal subjects this works out at about 2·5 litres, being raised in certain types of failure (disease of the lungs) and lowered in others (central depression of respiration). The main disadvantage of this method of estimating respiratory efficiency is that other factors besides failure of respiration and oxygen consumption

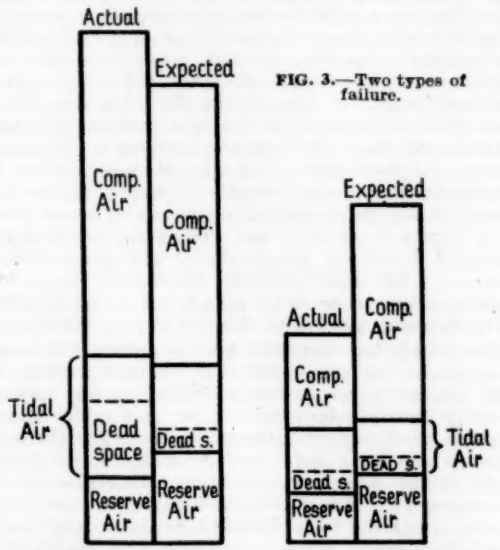

FIG. 3.—Two types of failure.

have to be considered. Even if a fixed rate of metabolism is assumed in calculating the ventilation equivalent it is still possible that over-ventilation might be due to stimulation at the respiratory centres by an increased hydrogen-ion concentration of the blood. Taken by itself, therefore, the ventilation equivalent test has only a qualified value. Its calculation is not a matter of great difficulty when a recording spirometer has been used to determine an average minute volume and oxygen consumption over the same period.

There is a second difficulty present in any attempt at estimating respiratory efficiency in terms of ventilation. Not all the air going in and out of the

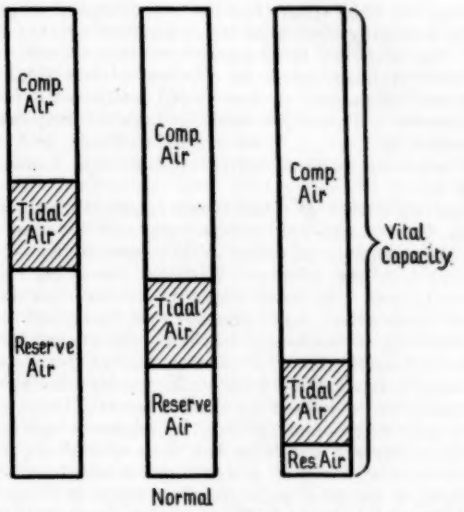

FIG. 4.—Three "styles" of respiration with identical vital capacity and tidal air.

mouth or nose enters into the true respiratory processes in the alveoli of the lungs. A certain amount of the expired air consists of ordinary unchanged atmospheric air which is mixed with the true expired air coming from the alveoli. This unused portion of expiration is spoken of as "dead-space air," and is said to have come from the "dead space." It is obvious that there should be a strict anatomical measurement of dead space available, and this has been estimated in the cadaver to be about 140 c.cm. Studied for the living subject by comparing the composition of mixed expired air and true alveolar air obtained at the end of expiration, much the same result is obtained for the adult with quiet respiration at rest. It can be stated, therefore, that about one-third, or 30 per cent., of the tidal air is dead-space air. When the size of the tidal air increases on exercise in the trained subject the size of the dead space appears to increase in proportion.

From the anatomical point of view it is impossible to conceive of a dead space, mostly consisting of the larger air-passages, becoming twice or even more times as large, and indeed some physiologists deny that this ever occurs and assume a fixed dead space in all circumstances. On the other hand, Verza [17] by means of an apparatus encasing the whole body claims to show increased volume of the lungs under certain conditions of increased ventilation. He thinks this is brought about by a diminished tone of the musculature of the lungs. The details of this controversial aspect of the subject have been set out elsewhere,[15] and considerable work on the question has led me to support emphatically the views of Haldane and his co-workers that the dead space does appear to increase, although under physiological conditions in the healthy subject its proportion of the tidal air remains constant. That is to say, if the normal true ventilation of the lungs is represented by 70 per cent. of the apparent ventilation this same degree of ventilating efficiency will be present on

exercise. Under abnormal conditions of forced hyperventilation, however, and in diseased conditions of the respiratory organs, the apparent increase of the dead space may be out of all proportion to the tidal air increase, so that the ventilating efficiency is considerably below 70 per cent. This must mean not that there is necessarily an increase in the anatomical dead space, but that an excess of inspired air is behaving like dead-space air and not entering into the gaseous interchanges in the alveoli. An increase in dead space in relation to the tidal air therefore represents an essentially inefficient type of respiration. The rapid shallow type of inspiration described in Lect. I. is an example of this, and it is also seen in patients with normal and increased tidal air.

The estimation of dead space is not difficult provided that samples of expired air and alveolar air can be obtained, together with measurement of an average tidal air volume. With the recording spirometer in use the total expired carbon dioxide is easily estimated, and alveolar air samples were obtained by a fractional method. In the series of patients investigated the average size of dead space increased progressively with an increasing inefficiency of respiration as judged by clinical tests. The patient previously mentioned, with a spontaneous pneumothorax collapsing one lung but with a vital capacity above normal, showed a dead space which was 65 per cent. of his tidal air. In other words his ventilation efficiency was only 35 per cent. instead of the normal 70 per cent. The same patient's ventilation equivalent for oxygen was 4 litres instead of the normal 2·5 litres. On the other hand, another patient in my series, a woman with asthma, had a vital capacity which was only 60 per cent. of normal. Yet her ventilation appeared to be excellent, as her dead space was 35 per cent. of her tidal air (a ventilating efficiency of 65 per cent. instead of 70 per cent.), and her ventilation equivalent for oxygen was 2·3 litres, also normal.

These two patients show in contrast the two types of respiratory failure frequently encountered (Fig. 3). The one has a poor functional use of moderately damaged apparatus, while the other makes a good functional use of a severely reduced "anatomical" reserve. The importance of tests of function is clearly indicated, and in these two methods of approach to the accurate estimation of pulmonary ventilation, dead space and ventilation equivalent for oxygen, lies an important line of research into respiratory efficiency which needs further extension.

Also under physiological conditions must be mentioned the question of respiratory "style." Probably everyone, normal or diseased, adapts his respiration at any one moment to the most comfortable style available, which is not necessarily the most efficient. Certain subjects appear to breathe badly with a normal vital capacity and vice versa. Goiffon [16] in France has especially studied this aspect of the subject, determining what fraction of the normal vital capacity is actually utilised by stimulating respiration to its maximum by rebreathing. He calls the result obtained the reflex vital capacity. Other French workers, whose views are summarised in more detail in the monograph mentioned above,[4] pay particular attention to the "position" of the tidal air in the scale of vital capacity. In a patient with a given fixed vital capacity and tidal air it is possible to imagine various types of breathing, some with a relatively high value for complementary air and low value for reserve air and vice versa (Fig. 4). In other words, some patients may breathe with the lungs nearer to the position of full inspiration, and others nearer to the position of full expiration than normal. There is also the question of the time taken in the respiratory cycle for inspiration and expiration. Prolonged expiration time is common in certain types of respiratory failure. In accurate measurements on a recording spirometer the ratio between inspiration time and expiration time is about 1 : 1·3 in normal subjects, while in diseased conditions the expiration time may be nearly double the time taken for inspiration. Since the pressure changes within the thorax during the two phases of respiration have important effects upon the cardiovascular system, it is possible that prolongation of respiration may be more significant in relation to respiratory failure and the subjective feeling of shortness of breath than is generally realised.

EXPIRATORY FORCE

The measurement of the expiratory force is by no means a new method of testing respiratory efficiency, for the celebrated Stephen Hales [17] had already devised a method involving the use of a column of mercury in 1727. It was, however, Flack's revival of this test,[18] in particular for testing aviation pilots, that has led to its more extensive use. Two methods of using the modern mercury U-tube are commonly employed. The maximum height of mercury which can be attained by a subject breathing out through the mouth is the expiration force, while the length of time that the mercury column can be sustained at 40 mm. with the nose clipped is the endurance test. Both these tests depend upon factors other than those involved in the respiratory apparatus proper. Critics of the method [19] maintain that it is not a good test of physical fitness, that it depends in part upon the power of the abdominal muscles, and that there is a considerable psychological aspect. In patients with lung disease there is usually some reduction below the normal levels reached, but Beaumont [12] found no significant difference in the average height of mercury in the expiratory force test between patients with active pulmonary tuberculosis and those with quiescent lesions in the lungs. The endurance test is clearly of more value in demonstrating the coördination between the cardiovascular and respiratory systems under stress than as a purely respiratory test. The great merit of the mercury U-tube is its simplicity and harmlessness, but, as with other methods mentioned above, the results obtained must be considered in conjunction with different aspects of the respiratory function.

In considering the tests for respiratory efficiency, it must be borne in mind that methods suitable in the laboratory for trained subjects or for normal, healthy individuals may not be applicable at the bedside for ill patients. Certain criticisms of the tests chosen here have been made [20] which in part lose sight of this necessary restriction. Referring to the monograph [4] I have already mentioned, the critic writes: "If the tests recorded in this report could have been correlated in some way with the cardiac output, hæmoglobin percentage and degree of oxygen saturation of the venous blood, their value might have appeared much greater." Estimation of the total hæmoglobin was carried out in certain patients early in my series, but the results were so irregular and appeared to bear so little relation to the other tests, except with a small group of clearly anæmic patients investigated in Hamburg, that this was abandoned. Similarly with the question of the blood gases. To be of any value it is necessary to know the oxygen content of both arterial and mixed

venous blood and, despite the fact that this has been carried out by other observers, I still maintain that there are intrinsic difficulties in obtaining satisfactory results, and arterial puncture, especially if repeated observations have to be made, is not comfortable for the patient. Neither of these observations is of much direct value unless the cardiac output and the total blood volume are known. The measurement of the output of the heart is another controversial subject in physiology, and none of the methods so far available appears to be easily applicable to the bedridden patients with respiratory distress; nor are the results likely to be obtained necessarily reliable even if conditions are satisfactory. It is interesting to learn, moreover, from a recent study [20a] of the blood volume in chronic respiratory disease, that no definite correlation was found between the severity and duration of symptoms and an increase in blood volume, nor was any definite relationship established between alterations in the blood volume and changes in the pulmonary capacity.

I have taken this opportunity of replying briefly to these criticisms because it is essential if the subject is to be further investigated that the clinical application of any test be kept in the foreground. Along the lines of estimating vital capacity and its component parts, ventilating efficiency, expiration time-ratio, and expiratory force, I believe there are many important practical applications in various branches of medicine. Obviously such tests must be applicable to subjects who are confined to bed, who require a minimum of preliminary "training," and who experience a minimum of discomfort. The tests should be free from any possible harm, and the shorter their duration the less the likelihood of abnormal factors entering into the results. After some experience I have been able to reduce the time of the actual tests for the patient (excluding the mercury U-tube estimations) to five or six minutes and only a short preliminary test has been necessary to accustom the patient to the sight, sound, and feel of the apparatus. I do not propose to repeat here the detailed results obtained, but in concluding this section I will content myself with asserting that early respiratory failure can be detected, and some idea of the degree of failure determined objectively by a combination of tests based essentially upon physiological principles.

Diagnosis in the New-born

The diagnosis of the type and cause of respiratory failure in the new-born is important in relation to treatment. It has already been indicated that nothing is to be gained by the use of the time-honoured terms "blue asphyxia" and "white asphyxia." The colour of the baby is no clear guide to the degree of failure, although generally speaking the pallid infants present a more serious problem, and as regards causation almost any of the ætiological factors may result in either cyanosed or pale babies. Moreover, while the teaching that babies with "white asphyxia" must be gently handled is generally followed, it seems to be still far too widely held that those who are blue may receive more violent forms of stimulation and artificial respiration. In many instances such violence will convert a blue baby into a pale, collapsed one.

The first essential point in diagnosis is to determine whether there is obstruction in the respiratory passages and, if so, where. The presence of mucus and debris in the mouth and pharynx is easily ascertained and can be promptly dealt with. If the infant is blue, has not breathed at all, but has good muscle tone and offers some resistance to the passage of a finger or instrument into the mouth, the adequate toilet of pharynx will often be sufficient to remove any obstructive difficulty; breathing occurs or can be readily stimulated by the administration of carbon dioxide and oxygen. Such a baby usually begins to cry and struggle almost at once, and no further difficulty is encountered. At the other end of the scale there is the depressed, pale infant, with limp muscles, a curious cyanotic tint under the nails, a grey appearance round the mouth, who offers no resistance to any form of movement. Such infants can frequently be intubated through a glottis which has lost all its tone (Brown [21]). If obstruction is present it is only too frequently in the fine bronchi, aspirated material like the intubating instrument having met with no opposition. In such extreme cases twitching of the face and occasional shallow gasps are the only signs of difference from frank stillbirths, and efforts at resuscitation are usually fruitless. Between these two extremes come a large number of instances where there are irregular efforts at breathing, muscle tone is poor, but some resistance is put up against attempts at intubation. Aspiration reveals debris in the pharynx and, if intubation has been possible, also in the trachea and possibly the larger bronchi. In some cases, especially in the narcotised baby, a few breaths are taken after birth and then apnœa develops and all efforts at stimulation by artificial respiration or external applications make the general state worse. The colour of such babies may again be either "blue" or "white," roughly according to the degree of disturbance, or the colour may change for the worse in the course of the first few hours.

The diagnosis of persistent collapse or inefficient expansion of the lungs is often difficult. The classical signs of weaker breath sounds and impaired percussion note at the bases or elsewhere are, in my experience, difficult to detect, since, as is well known, throughout childhood the breath sounds are very easily conducted from one point of the lung to quite a wide expanse of the chest wall (even through thick pus). More important is the presence of a particularly sharp, crackling type of râle (a sort of amplified crepitation of the variety found early in pneumonic consolidation) which I have learnt to regard as of ominous significance if it persists despite treatment. X ray examination presents an easy way of detecting incomplete expansion of the lungs, but I have only slight experience of its use. Babies with persistent delayed expansion often suffer from "attacks of cyanosis." That is to say, any slight disturbance as, for example, during feeding or changing, provokes irregular breathing and the colour may become blue. Such examples of failure of respiration at birth which persist into the neonatal period present several special points in diagnosis for consideration.

Roughly speaking, if a new-born baby continues to have difficulty with breathing, the main conditions to be considered are delayed expansion, bronchopneumonia, congenital heart disease, and dehydration fever. These disturbances may rarely be of the central type of attacks of arrested respiration described by Still and referred to in Lect. I. The signs of delayed expansion have already been briefly mentioned. Shallow breathing, poor movement of the lung bases, the presence of sharp râles, and evidence of some obstruction in the bronchi point to this condition. Obstruction is indicated by "bubbling." The baby seems constantly to be accumulating rather sticky mucus in the mouth and pharynx, primitive efforts at coughing also occur, and respira-

tion becomes embarrassed as such mucus collects. The risks of broncho-pneumonia increase every day that full expansion remains delayed. Respiration becomes more rapid, the temperature rises (although not necessarily), the material accumulating in the pharynx becomes mucopurulent, and later frankly purulent. The signs in the lungs remain very much the same except that the added sounds may become moister. A fatal result in a day or so is inevitable.

Fever and rapid respiration in the first few days of life do not, however, always mean primary lung disease. The curious and little understood "inanition" or "dehydration" fever, occurring usually about the third or fourth day, in a baby above the average size, for whom the supply of fluid has not been adequate, may sometimes present a clinical picture in which the respiratory signs predominate. I have seen a baby with a respiratory rate of 70, a fever of 103° F., a dry cough, slight cyanosis, movement of the ala nasi, and a hot dry skin become normal in 24 hours after the administration of fluid (half-strength normal saline) was begun. Such babies are in danger because with the rapid respiration (induced primarily by the fever, I suppose) more water is lost by the body and a vicious circle is begun. The clue to the diagnosis is the time of onset, the type of child, and the complete absence of any signs of disease in the lungs. Indeed, until the onset of the rapid respiration, it is uncommon for there to have been any disturbance of the breathing.

Congenital heart disease rarely presents much difficulty, but there are instances where cyanosis, attacks of rapid respiration, and even sudden death from respiratory failure have occurred where there have been no physical signs during life of a congenital heart lesion. That is to say, there was no alteration in the size of the heart nor in the sounds and no murmurs could be detected. There is, however, in such instances commonly a curious "pumping" movement of the diaphragm, seen as a rapid "flutter" of the upper part of the abdomen and lower part of the chest, which is often helpful. (I first learnt this sign from Dr. Robert Hutchison.) In such cases, also, there are usually no signs of disease in the lungs.

Finally in this group may be mentioned those cases of intracranial injury where an increasing intracranial pressure leads to respiratory disturbances in the second or third day of life, the initial hours of respiratory function having been relatively normal. Here the "attacks" of respiratory failure are often accompanied by drowsiness, twitching, bulging of the anterior fontanelle, and other manifestations of "head injury." In those instances where cerebral œdema is the dominant lesion, hypertonic rectal saline, as mentioned in Lect. I., often restores respiration to normal and may to some extent be looked upon as a diagnostic test where respiration is more affected than any other function.

REFERENCES

1. Jurin, J.: Philosoph. Trans., Abr. (by H. Jones), 1749, iv., Pt. II., 441.
2. Campbell, M.: Quart. Jour. Med., 1934, iii., n.s., 369.
3. Lundsgaard, C., and van Slyke, D. D.: Medicine, 1923, ii., 1.
4. Moncrieff, A.: Med. Res. Council, Spec. Rep. Ser. No. 198, 1934.
5. Jacobeus, H. C., Frenckner, P., and Björkman, S.: Acta Med. Scand., 1932, lxxxix., 174.
6. Björkman: Ibid., Suppl. lvi., 1934.
7. Cripps, L. D., Greenwood, M., and Newbold, E. M.: Biometrika, 1922–23, xiv., 316.
8. Treadgold, H. A.: THE LANCET, 1932, ii., 813.
9. Dreyer, G.: Assessment of Physical Fitness, London, 1920.
10. Myers, J. A.: Arch. Internal Med., 1922, xxx., 648.
11. Peabody, F. W., and Sturgis, C. C.: Ibid., 1921, xxviii., 501.
12. Beaumont, G. E.: THE LANCET, 1933, ii., 918.
12a. Hurtado, A., et al.: Jour. Clin. Invest., 1934, xiii., 169.

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THE SCHICK TEST AND ACTIVE IMMUNISATION IN RELATION TO EPIDEMIC DIPHTHERIA

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IN view of the prevalence of severe types of diphtheria in many parts of England, it is natural to inquire whether the principles underlying active immunisation are sound, and to what extent Schick-negative persons are protected against infection.

Some years ago, before immunisation of nurses in isolation hospitals was introduced, the incidence of diphtheria in a number of large hospitals ranged from 5 to 15 per cent. per annum, with an average of about 10 per cent. It was soon discovered that active immunisation reduced the incidence to virtually nil; occasional cases still occurred amongst the Schick-positive nurses—i.e., those not yet tested or fully immunised—but, broadly speaking, Schick-negative nurses were immune to frank clinical diphtheria. This statement is still true in fever hospitals, even in areas where the case-mortality rate of the patients from diphtheria is high. Similarly, excellent results have been obtained with children in schools, institutions, and communities in which diphtheria was formerly prevalent. Thus, Burn (1934) has reported the occurrence of only 14 cases of diphtheria in 58,000 children inoculated with diphtheria prophylactic between 1925 and 1934 in Birmingham. Nash (1933) has not had a single case of diphtheria in a period of three years amongst approximately 3000 children certified as immune, either naturally or after immunisation, in a London borough. One of the largest series of figures available has come from the New York Department of Health (Park and Williams, 1934). A total of 100,000 children were Schick-tested and, where necessary, given injections of prophylactic, and a similar number kept as controls. The reported cases of diphtheria were five times as numerous in the controls as in the inoculated series. The severe undoubted cases were all among the untreated children.

DIPHTHERIA IN SCHICK-NEGATIVE REACTORS

The occasional occurrence of diphtheria in Schick-negative persons shows that absolute immunity to clinical infection has not yet been attained by the methods of testing and immunisation now in vogue.

O'Brien, Okell, and Parish (1929) reported 18 cases among about 20,000 persons in this country who had at one time or another been Schick-negative. Most of these cases were extremely mild, and some were apparently "tonsillitis in Schick-negative carriers." We do not know whether

REFERENCES (*continued from previous column*)

13. Knipping, H. W., and Moncrieff: Quart. Jour. Med., 1932, i., n.s., 17.
14. Verza, F.: Pfluger's Arch., 1933, ccxxxii., 322.
15. Moncrieff: THE LANCET, 1933, i., 956.
16. Goiffon, R.: Compt. rend. Soc. de biol., 1928, xcix., 188.
17. Hales, S.: Vegetable Staticks, London, 1727, p. 239.
18. Flack, M.: Med. Res. Council, Spec. Rep. Ser. No. 53, 1920, p. 98; and THE LANCET, 1921, ii., 593, 637, 693.
19. Moncrieff: THE LANCET, 1932, ii., 665.
20. THE LANCET, 1934, ii., 1175 (annotation).
20a. Kaltreider, N. L., et al.: Jour. Clin. Invest., 1934, xiii., 999.
21. Brown, W. E.: Canad. Med. Assoc. Jour., 1933, xxviii., 175.

C. diphtheriæ "gravis" (Anderson, Happold, McLeod, and Thomson, 1931) was responsible for any of these attacks.

Dudley, May, and O'Flynn (1934) described an epidemic of 23 cases of mild diphtheria, due to bacilli of gravis type, amongst about 900 boys at Greenwich Hospital School; over 90 per cent. of the boys had been maintained Schick-negative for four years; 19 of the 23 patients had been Schick-negative either at the onset of the attack or in the previous two years. The illnesses were all trivial, and the small amount of membrane present in the throat cleared in 12–24 hours with or without administration of a small dose of antitoxin. Most of the cases were indeed "unrecognisable as diphtheria without laboratory confirmation." Boys who were naturally Schick-negative were more resistant to infection than those artificially immunised. About the time of the outbreak the carrier rate was higher than had been observed before—an observation consistent with the view that this type of *C. diphtheriæ* gravis was of high infectivity in the school. The authors conclude that at the Greenwich School we have a splendid testimonial to the value of artificial immunisation, and that, but for the fact that the population had been immunised, a very serious outbreak was inevitable.

Robinson and Marshall (1934), working in Manchester, found 12 diphtheria patients who had negative Schick reactions immediately prior to the onset of the disease; 1 case was recorded as "severe," 3 as "moderately severe," and 8 as "mild." *C. diphtheriæ* gravis was responsible for 8 cases, and the "intermediate" type for 4.

We ourselves have recently been associated with a number of sporadic cases of diphtheria in one "immunised" institution, and two small epidemics in two others. C. diphtheriæ ***gravis was responsible in all cases.*** The following is a brief account of our experience:—

(1) *Cases amongst the nursing staff (about 500) of a large voluntary general hospital in London.*—Since 1929 the nurses have been Schick-tested and where positive immunised. In 1934 5 cases were reported at intervals. Of the 5 patients 4 had been Schick-negative one to three years previously, after immunisation, and 1 was Schick-positive, although six months earlier she had received two injections of formol toxoid, each of 1·0 c.cm. All the attacks were mild and responded rapidly to treatment; no complications or sequelæ occurred.

(2) *Epidemic at orthopædic hospital (about 80 children) near London.*—Since 1923 the patients, but not the staff, have been Schick-tested, and, where positive, immunised. At the end of 1934 an epidemic of 5 cases occurred, the first patient being a nurse. Altogether 3 cases were reported amongst the untested and unimmunised staff; 1 was mild and 2 were moderately severe. Two mild cases were reported amongst the patients in the ward in which the first case, a nurse, had been on duty; one was a child Schick-negative a few months earlier, after a course of immunisation, and the other a Schick-positive newcomer whose course of immunisation had just commenced. Thus only 1 of the 5 cases was a known Schick-negative reactor. So far there have been no complications or sequelæ. At the time of the epidemic, virulent *C. diphtheriæ* gravis was isolated from no fewer than 11 of 27 Schick-negative patients in the ward by the combined Loeffler, Horgan and Marshall technique (Parish, 1934)—an exceptionally high carrier-rate (40 per cent.).

(3) *Epidemic at residential school (about 250 children) near London.*—In 1931 the whole school of 248 boys and girls, aged 4 to 15 years, and 33 staff was Schick-tested, and the positive reactors immunised. In the springs of 1932 and 1933 newcomers were similarly treated, but in the spring of 1934 this procedure was seriously interrupted by measles, chicken-pox, and scarlet fever. To investigate the duration of the Schick-negative state, re-Schick-testing of the school, excluding the staff, was performed in June, 1933, when the relapse-rate from Schick-positive to Schick-negative was 2·3 per cent., and in July, 1934, when it was 3 per cent. The Schick-positive reactors in June, 1933, and July, 1934, received further immunising injections.

The epidemic started in July, 1934, in newcomers, who had already been attacked by measles and other infectious diseases, and spread to the rest of the school. Altogether there were 4 cases in unimmunised subjects, and 8 in children Schick-negative, either naturally or after a course of immunisation.

(*a*) Of the 4 cases in unimmunised subjects, 2 were moderately severe, 1 was mild, and 1 indefinite. Membrane was present on the throats of the 4 patients for 7, 3, 6, and 5 days respectively. Infection with hæmolytic streptococci contributed to the severity of the illness in one case. The patients received from 12,000 to 44,000 units of antitoxin. One developed late paralysis of the soft palate and leg muscles.

(*b*) Of the 8 cases in *Schick-negative reactors*, only 1 was a "natural" negative; the remaining 7 had been rendered Schick-negative after immunisation from two months to two years previously. The "natural" negative reactor, and 5 of the 7 who were negative after immunisation, had been negative on more than one test—viz., in 1932, 1933, and 1934. Of the attacks 2 were classified as very mild, and 5 as mild or moderate attacks. The exudate on the throat was in some cases merely a few specks, but in others was a definite and fairly extensive membrane. Its duration was 12 hours, 2, 3, 3, 3, 4, 5, and 5 days in the different cases. In the two instances in which it persisted for five days, its appearance did not at first suggest diphtheria, and antitoxin was not given until the third and fourth days of the disease respectively. In one case, as in the unimmunised group, hæmolytic streptococcal infection apparently increased the severity of the disease. All the patients received doses of antitoxin ranging from 10,000 to 20,000 units. No case in this group gave rise to any anxiety, and in none did paralysis develop, although 5 patients had weakness or paresis of the leg muscles after they first got up.

As in the epidemic at the orthopædic hospital the carrier-rate was high. Virulent *C. diphtheriæ* gravis were isolated from 27 of 68 contacts (40 per cent.) by the combined Loeffler, Horgan and Marshall technique. Five of the 27 carriers still harboured virulent organisms two months later.

There is no doubt that, coincident with the increased prevalence and severity of diphtheria in many areas of England, the number of cases reported in Schick-negative reactors has also tended to increase. Fortunately the majority of these cases are mild, although a few are moderate or even severe. The infecting strain is usually *C. diphtheriæ* gravis (as in our series of cases), less frequently the intermediate type, and very rarely mitis.

GRAVIS, INTERMEDIATE, AND MITIS ORGANISMS

In 1932 Parish, Whatley, and O'Brien thought that the association of the gravis bacillus with severe attacks of diphtheria was a purely local phenomenon in the Leeds area, but this view is no longer tenable. In many parts of the country the gravis organism is now responsible for cases with severe toxic symptoms, in which the prognosis is often grave and the fatality-rate high. McLeod (1934) has recently stated that, in fever hospitals in Dundee, Glasgow, Hull, Leeds, London, and Manchester, the case-mortality rate was 13·6 per cent. in 900 cases of diphtheria due to the gravis type of bacillus, as compared with 10·5 per cent. in 700 cases due to the intermediate type, and 3·2 per cent. in 340 cases due to the mitis

type. In a series of 192 cases in London the corresponding figures quoted by Joe (1934) were 11 per cent. (53 cases), 8 per cent. (84 cases), and 6 per cent. (55 cases) for gravis, intermediate, and mitis types respectively. On the other hand, Robinson and Marshall (1934) found no significant difference in the case-mortality rate in Manchester of those infected with the gravis type and those infected with the intermediate. The conclusion therefore seems justified that gravis and intermediate strains are mainly responsible for the mortality from diphtheria in this country at the present time, and that mitis strains are comparatively unimportant, although they also are sometimes responsible for severe or even fatal cases.

Experiments in animals.—Robinson and Marshall (1934) state that gravis and intermediate strains appear to possess greater virulence than mitis as judged by their power to invade and persist in the tissues of the body. Parish, Whatley, and O'Brien (1932) showed that guinea-pigs injected with gravis, intermediate, or mitis strains could be saved by the subsequent injection of the ordinary commercial Park 8 antitoxin. Although gravis and intermediate strains are on the whole less easily controlled by serum than mitis, some mitis strains are at least as virulent as the most virulent gravis. Guinea-pigs could also be immunised actively against massive doses of any of the three types by the ordinary prophylactics—T.A.M., T.A.F., and F.T. Thus, in experiments in animals, circulating antitoxin, whether acquired passively as horse antitoxic serum, or induced actively by the ordinary prophylactics, will control infection by any of the three types of the diphtheria bacillus.

CIRCULATING ANTITOXIN IN HUMAN SERUM

In an endeavour to correlate the amount of circulating antitoxin with the presence of diphtheria in "immunised" communities, we have investigated the antitoxic values of the serum of unselected nurses and children in a number of hospitals and institutions (see Table).

Institution.		Examined.	Circulating antitoxin in units per c.cm.							
			1/1000 or less.	1/500	1/250	1/100	1/50–1/25	1/10–1/2	1–5	10–20
Nurses at fever hospital ..	A.	12	—	1	—	—	—	4	7	—
	B.	12	—	2	2	—	—	6	1	1
	C.	11	—	—	—	—	1	7	3	—
Nurses at voluntary general hospital..	D.	20	3	2	4	5	2	1	3	—
Children at orthopædic hospital..	E.	18	2	—	—	1	1	10	6	—
Children at residential school ..	F.	37	—	—	—	—	—	3	22	12

The serum from the blood samples was titrated to 100 per cent. differences—e.g., 1/500 unit in the Table signifies 1/500 unit or more of circulating antitoxin per c.cm., but not 1/250 unit. Titration to closer levels would not appear to be necessary.

(*a*) Of the nurses in the three large fever hospitals, A, B, and C, who had formerly been Schick-tested, and, where positive, immunised, 35 had fairly high antitoxic values ranging mostly between 5 units and 1/10 unit per c.cm., the lowest being 1/500 unit. Infection of the nursing staffs in these hospitals is extremely rare, although in two hospitals many rapidly fatal cases of diphtheria due mainly to the gravis strain have been treated.

(*b*) In the large voluntary general hospital D 20 nurses had values on the average considerably lower, ranging mostly between 1/25 unit and 1/1000 unit or less per c.cm. This is the hospital referred to earlier in this paper in which 5 sporadic cases of diphtheria (4 in subjects Schick-negative one to three years previously) had been reported amongst the nursing staff in 1934.

(*c*) In the orthopædic hospital E 18 children had higher antitoxic values on the average than the nurses in voluntary hospital D, and only 2 had 1/1000 unit or less per c.cm. We have elsewhere discussed the outbreak in this hospital. Three cases were reported in the unimmunised staff and 1 in a recently admitted patient who was undergoing immunisation. Only 1 mild case occurred amongst 80 "immunised" patients, although the virulent carrier-rate was high at the time of the epidemic.

(*d*) At the residential school F the blood samples were not available from the children until two months after the epidemic of 12 cases (8 Schick-negative) discussed earlier in this paper. Of 37 samples examined, the majority contained very large amounts of antitoxin, the average value being 6 units, the highest 20 units, and the lowest 1/5 unit per c.cm. Our method of dealing with the outbreak at this school was to raise the level of circulating antitoxin artificially by giving all the children an additional injection of prophylactic, F.T. or T.A.F. Whether *post hoc* or *propter hoc* no further cases occurred, notwithstanding the 40 per cent. gravis carrier-rate in a section of the school. The nurses at the voluntary general hospital D and the children at the orthopædic hospital E have also received further injections of prophylactic. It is probable that later we shall find a distribution of values in hospitals D and E similar to that obtained at residential school F, and that we can expect a high degree of immunity.

So far as they go, the data from all these hospitals and schools indicate that circulating antitoxin in sufficient amount (possibly 1/50 unit per c.cm.) affords protection against clinical diphtheria whatever type of bacillus is present, but further work is necessary before the level of safety can be stated with confidence. Since latent immunisation by exposure to subinfective doses of diphtheria bacilli is an uncertain factor in maintaining this level, periodic injections of prophylactic may be necessary to give complete safety. A precedent for artificial immunisation, repeated at longer or shorter intervals, is afforded by the procedures now generally accepted of revaccination against small-pox and of periodic inoculation of T.A.B. vaccine.

The "Schick level."—The occurrence of a small number of cases of diphtheria in Schick-negative reactors shows that the level of circulating antitoxin detected by the Schick test does not imply absolute immunity. But a Schick-negative reaction emphatically does indicate, in the majority of cases, a considerable degree of protection—i.e., the power to produce antitoxin rapidly in response to an implantation of diphtheria bacilli in the throat. An immunised population will not experience severe diphtheria of the type which has recently ravaged the north of England.

In an investigation of the Schick level, blood samples have recently been taken from a number of individuals *at the same time* as the Schick test has been performed. We have thus avoided the error which has vitiated so much of the earlier work, in which blood samples were not obtained until the Schick reactions were read seven days after the test, and in which the values of circulating antitoxin were therefore higher on the average than in the series described below. (It is now well known that in immune or potentially immune individuals the small amount of diphtheria toxin injected in the Schick fluid may produce a secondary stimulus effect and cause a sharp rise in circulating antitoxin (Copeman, O'Brien, Eagleton, and Glenny, 1922) (Parish and Okell, 1928).)

Of 6 blood samples, taken at the time of a Schick

test which proved to be negative four and seven days later, 3 had a titre of 1/500 unit per c.cm. and 3 of 1/250 unit; many other samples had 1/100 unit or more. Again, 15 samples in our series from "partial positive" reactors, including some who were very faintly positive, had titres of 1/1000 unit per c.cm. (or slightly less in a few instances), while 3 others had 1/500 unit. These results suggest that the figure often quoted for the Schick level—viz., 1/30 unit per c.cm.—is greatly over-estimated. Schick, v. Gröer, and Kassowitz (1924) give the limit as 1/200 unit per c.cm., and our data suggest that, while there is considerable individual variation (see Jensen, 1931), it may be even lower—viz., 1/250–1/500 unit in some individuals. We have obtained additional confirmation of this low level from some preliminary experiments with "multiple Schick toxins," so prepared that the combining power was four and ten times that of the ordinary material without any increase in toxicity (Glenny and Waddington, 1929). Fourfold toxin gave negative reactions even at 1/100 unit per c.cm. and tenfold very faint positive reactions in 2 subjects with 1/50–1/25 unit. Many other patients with upwards of 1/30 unit per c.cm. were also negative to the tenfold toxin. (It is of interest that Glenny and Waddington state that in guinea-pigs 1/250 unit per c.cm. of their serum corresponds to the Schick-negative level.)

A series of blood samples received from Dr. J. C. Saunders, of Cork, and other sources has shown that early in attacks of diphtheria immunised subjects may have 1/100–1/250 unit of circulating antitoxin per c.cm. of their serum, which supports the view that not every Schick-negative reactor with only 1/250–1/500 unit per c.cm. is immune to clinical infection.

ARTIFICIALLY INDUCED IMMUNITY AND ITS MAINTENANCE

The duration of the Schick-negative state was dealt with by Parish and Okell (1928), who found that 5 per cent. of children Schick-negative after immunisation and 1 per cent. of those naturally Schick-negative had reverted to Schick-positive one to seven years later. More recently we have found considerable variation in relapse-rates—e.g., 0, 4·6, and 14 per cent. within a year of immunisation—amongst children in different communities, in spite of the fact that a much greater number of Lf units of formol toxoid, or its equivalent, had been used for immunisation than formerly.

We have also some evidence, although the numbers to date are small, that it is inadvisable to reduce the number of injections of formol toxoid from three to two in the primary course as has been recommended recently by some workers. Two injections induce a lower maximum level of circulating antitoxin than three, and therefore the percentage of relapses after an interval is higher, as might be expected. It is possible that the curve of antitoxin response to different types of prophylactic varies considerably, because some—e.g., alum toxoid (A.P.T.)—give a more continuous stimulus. Until the relapse-rate following immunisation with A.P.T. has been investigated, however, it should not be assumed that a single injection of this prophylactic will necessarily give rise to a sufficiently durable immunity.

The Schick relapse-rate is higher in the nursing staffs of some general hospitals than of fever hospitals. This is only to be expected since latent immunisation, by means of subinfecting doses of toxigenic *C. diphtheriæ*, is an important factor in the maintenance of a high level of protection. The extent to which this factor is at work in a community is a variable over which we have no control; it may indeed be negligible in certain closed communities where the percentage of primary Schick-positive reactors is high or where the hygienic conditions are good. Therefore, even when subjects have been immunised with the most potent prophylactics available, we suggest a periodic injection to keep up a high level of circulating antitoxin. Individuals who are "natural" Schick-negative reactors may be given one injection of prophylactic at the time of the Schick reading, and periodically thereafter if further experience justifies this.

Finally, with regard to the choice of prophylactic, (*a*) under the age of eight years, formol toxoid (F.T.), toxoid-antitoxin mixtures (T.A.M.), toxoid-antitoxin floccules (T.A.F.), or alum toxoid (A.P.T.) may be used; (*b*) for older individuals, T.A.F. is probably the best prophylactic since its propensity to cause reactions is extremely low. The Moloney test can be discarded by adopting this arrangement.

SUMMARY AND CONCLUSIONS

1. With the spread of severe diphtheria in many areas in England, some isolated cases and small outbreaks have been reported in Schick-negative reactors. The infecting strains have usually been *C. diphtheriæ* gravis, and less frequently the intermediate type. The illnesses have, in most instances, been mild, although moderate attacks—a few severe—have also been met with.

2. Animal experiments indicate that circulating antitoxin, whether acquired passively as ordinary antitoxic serum or induced actively by ordinary prophylactics, will control infection by any of the three types of bacillus, gravis, intermediate, or mitis.

3. The "Schick level" in man shows considerable individual variation. A Schick-negative reactor may have, at the time of the Schick test, as little as 1/250–1/500 unit of circulating antitoxin per c.cm. of serum. If such a person contracts the disease, it will, however, almost always be mild. A population which has been at one time or another Schick-negative will not experience an epidemic of severe diphtheria of the type which has been prevalent recently in many areas in England.

4. We have attempted to correlate the levels of circulating antitoxin in the serum of nurses and children in certain "immunised" communities with the occurrence of diphtheria amongst them. Where a fairly high general level—e.g., above 1/50 unit of circulating antitoxin per c.cm.—is maintained, either by latent immunisation as in the Schick-negative nursing staffs of fever hospitals, or artificially by repeated injections of prophylactic, clinical infection with *C. diphtheriæ* appears to be negligible.

5. The general principles which underlie active immunisation are sound, but the amount of circulating antitoxin required to ensure safety against attack by certain strains of gravis and intermediate types is higher than that indicated by the present Schick level. Further research is suggested with "multiple Schick toxins" in order to determine the level of immunity necessary to confer protection against these infections.

6. Our data suggest that an immunising course of F.T., T.A.M., or T.A.F. should consist of at least three 1 c.cm. doses, and not two as has sometimes been recommended. (A single injection of 0·5 or 1 c.cm. of A.P.T. may conceivably give a more durable immunity than three injections of the older

prophylactics, but this is still a matter for investigation.)

7. "Natural" Schick-negative reactors may be given one injection of prophylactic at the time of the Schick reading. In addition, it may be advisable to give periodic injections to all, whether Schick-negative on primary test or after a course of immunisation. We have used this procedure and obtained very high immunity.

We are indebted to our colleague, Mr. A. T. Glenny, for carrying out numerous blood titrations and for preparing and standardising routine and experimental toxins for Schick tests. We should also like to thank a number of friends for their generous assistance, especially Mr. A. L. Moreton, and Drs. J. S. Anderson, A. J. Gore, J. McGarrity, R. R. Powell, J. C. Saunders, and J. Smith. We are particularly grateful to Dr. A. Priestman for clinical data and many facilities in one section of our work.

REFERENCES

Anderson, J. S., Happold, F. G., McLeod, J. W., and Thomson, J. G.: Jour. Path. and Bact., 1931, xxxiv., 667.
Burn, M., and Fellowes, V.: THE LANCET, 1934, ii., 1181.
Copeman, S. M., O'Brien, R. A., Eagleton, A. J., and Glenny, A. T.: Brit. Jour. Exp. Path., 1922, iii., 42.
Dudley, S. F., May, P. M., and O'Flynn, J. A.: Med. Research Council, Spec. Rep. Ser. No. 195, 1934.
Glenny, and Waddington, H.: Jour. Path. and Bact., 1929, xxxii., 275.
Jensen, C.: Compt. rend. Soc. de biol., 1931, cviii., 555.
Joe, A.: See THE LANCET, 1934, i., 299.
McLeod: Ibid.
Nash, E. H. T.: Public Health, 1933, xlvi., 245.
O'Brien, Okell, C. C., and Parish, H. J.: THE LANCET, 1929, i., 149.
Parish: Ibid., 1934, ii., 1192.
Parish and Okell: Ibid., 1928, ii., 322.
Parish, Whatley, E. E., and O'Brien: Brit. Med. Jour., 1932, ii., 915.
Park, W. H., and Williams, A. W.: Pathogenic Micro-organisms, London, 1934, p. 407.
Robinson, D. T., and Marshall, F. N.: Jour. Path. and Bact., 1934, xxxviii., 73.
Schick, B., v. Gröer, F., and Kassowitz, K.: Handb. d. biol. Arbeitsmeth., 1924, Abt. 13, Teil 2, Lfg. 137.

TREATMENT OF VULVO-VAGINITIS WITH ŒSTRIN

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GONOCOCCAL vulvo-vaginitis is a distressing disease from many points of view. The parents feel themselves to be under a cloud from the outset and are always worried as to the source of the infection, the possibility that they themselves or other children may acquire the disease, and the effect on the child in later life. The children mostly suffer some mental as well as physical trauma, and most venereologists are agreed that the less interference there is the better. Unfortunately the disease has a tendency to become chronic, and a great deal of treatment under careful hospital supervision is usually required. It is a serious social problem, and a constant source of anxiety to those in charge of institutions for children.

Numerous methods of treatment have been suggested and tried, and until recently we used as a routine measure in uncomplicated cases daily vaginal douches of Lotio. Chloramine-T at 1 in 150 or of iodine one drachm to a pint of water. This alone has never been sufficient, and we have used in addition, in a large series of cases, small vaginal packs of gauze strips soaked in glycerin, flavine, or glycerin and protargol 10 per cent. The last named was the most satisfactory, and the patients were packed every morning and the pack left in for 24 hours. They were then douched before the next pack was inserted. Glycerin alone was not so effective in clearing up the condition, and also had the disadvantage of making the patients very sore and giving rise to very unpleasant odours in the ward. Flavine was not persevered with, mainly because of the staining of the bed-linen and clothes, which were often ruined. The average length of hospital stay in 22 cases treated by this method during the years 1932–1933 was 101 days—the shortest time being 36 days and the longest 193 days.

In view of the fact that œstrin produces epithelisation of the vaginal mucous membrane in virgin mice and rats, it was suggested to us by Dr. Alison Macbeth that it might be useful in the treatment of young children who were producing pus in their vaginal canals. The method has been tried by Dr. Robert M. Lewis, of New Haven, Connecticut, in eight cases of gonococcal vulvo-vaginitis in girls, with marked success.[1] We have tried œstrin as the main method of treatment in a series of 20 cases, extending over a period of a year. The numbers are too few to arrive at definite conclusions, but the results are recorded here in the hope that officers in charge of venereal disease departments with larger numbers of children under their care will give the method a prolonged and carefully controlled trial. It was found necessary to douche these children once a day, and iodine ℥i to Oi of water was the usual solution used. In one case treated at home it was not feasible to douche the child, who was only 1½ years old, and she appeared to be a resistant case as she remained gonococcus positive for a whole month, in spite of 2000 units of œstrin given daily. As soon as douching was started, however, immediate improvement was shown and the child became negative in smears after one week. We are convinced from our previous experience that it is not possible to clear gonococcal vulvo-vaginitis by douching alone, and this case, together with another, which we deliberately used as a control to this one, showed that regular douching must be given, at least in the early stages of the disease, in association with œstrin. In the case of relapses detected early, we were able to effect a cure by œstrin alone, either by injection or by mouth.[2]

DOSAGE

In the absence of any recorded experiences we had to find out by trial the most suitable doses and mode of administration for children from 1 to 12 years of age. We treated our first ten cases by intramuscular injections of keto-hydro-xyœstrin (Menformon), and starting with 100 units we found that we could not obtain any obvious improvement with 100, 250, 500, or 750 units injected daily. Three cases, however, responded to 1000 units given daily for about six weeks. We then tried the effect of one massive intramuscular dose of dihydroxy-œstrin benzoate (Dimenformon), and two children, who received such an injection of 50,000 units, responded remarkably well and became negative after one week. In one of these there was a slight bacterio-

[1] Amer. Jour. Obstet. and Gyn., 1933, xxvi., 593.

[2] Our criteria of cure are repeated negative swabs during out-patient observation extending over a period of two to three months during which a large dose (375 millions cocci) of gonococcal vaccine and a glycerin pack left in the vagina for 24 hours have also yielded negative results.

logical relapse at 11 weeks which cleared up without further treatment and the child has now been cured for 4½ months. The other child suffered two separate relapses, each of which responded to an injection of 20,000 units œstrin. Two further children did not respond to this large single dose which was repeated twice in one case and three times in the other at weekly intervals. Both these cases relapsed quite early and needed further treatment by œstrin.

The second series of ten patients was treated by oral administration of œstrin. In these the results were more uniform. The first two received 1000 units daily for an average period of 93 days. The length of time between the start of the œstrin treatment and the last positive swab obtained was around 77 days in each case and both cases relapsed. The next five patients received 2000 units daily; the average length of œstrin treatment was 50 days, the time elapsing before the last positive swab was obtained was 27 days and four of the five children relapsed. Although all these seven cases were eventually cured by œstrin, as their relapses responded readily to further œstrin treatment, we felt, nevertheless, that we had not yet achieved a rapid enough effect and so we further increased the œstrin to a daily dose of 4000 units by mouth. Three children who received this dose averaged only 28 days œstrin treatment, their last positive swabs were only 16 days after the start of œstrin treatment, and none of them relapsed. We have therefore adopted this dose as the optimum and have treated several more cases with it, all of whom have responded just as strikingly, but whom we cannot include here as they have not yet gone for a sufficient length of time to be claimed as cures. We intend in our next few cases to start with a large intramuscular dose of 10,000 units and to continue from the next day with 4000 units daily by mouth.

To summarise, the dosage we would advocate using is 1000–2000 units of œstrin daily by injection or 4000 units daily by mouth. The latter, besides being a more congenial method to all concerned, can be given to out-patients and the results with the oral method seem more satisfactory, as none of the cases on this dosage has hitherto relapsed.

EFFECTS OF ŒSTRIN

(*a*) *Local.*—The mother of one of the children treated as an out-patient described the effect of œstrin in a few words: "It is wonderful the way the injection dries up the discharge." The change in the clinical picture is striking—almost dramatic—from the typical thick purulent flux of acute gonorrhœa to a slight, dry, cheesy white discharge. Microscopic examination of vaginal smears yielded equally striking results in most cases. Before the œstrin treatment the smear was typical of acute gonorrhœa—full of pus cells and gonococci; after even a few days' treatment the picture was often changed to that of an adult leucorrhœa—a mass of epithelial cells and Gram-positive bacilli of the Döderlein type, with not a single pus cell or gonococcus visible in the film.

(*b*) *General.*—As a rule the general health of the children was excellent and they put on weight rapidly. Several of the children complained of spasmodic pains in the abdomen radiating from the umbilicus, and one patient, a child of only a year old who was taking 2000 units every morning and on the twenty-eighth day after starting the treatment still showed pus cells and gonococci in the vaginal smears, five days later developed an attack of cyanosis and severe spasmodic abdominal pain; the same evening a second milder attack occurred, but the tablets being forthwith stopped the patient had no further attacks or discomfort. The most constant effect was enlargement of the breasts, which was apparent even in children of three years of age, but the swelling subsided in every case soon after discontinuing the œstrin administration. There was no swelling or enlargement of the genitalia, and no growth of pubic hair, except to a slight degree in a girl of 10 years.

ADJUVANTS: DURATION OF HOSPITALISATION

In only three of the cases was the treatment with œstrin and douches thought to be insufficient. In one there was definite rectal involvement which was treated with aqueous protargol. In another—the oldest child of the series—the swabs remained positive for a long time, and on examination with a vaginal speculum there appeared to be a slight erosion of the cervix, which cleared up after the cervix and vagina were swabbed with 5 per cent. silver nitrate on two occasions. In the third resistant case a small pocket of pus was found lying at the side of the cervix, which yielded to treatment with silver nitrate.

The average length of indoor treatment in this series of 18 in-patients was 73 days, the shortest being 26 days and the longest 148—the corresponding numbers with the older form of treatment being 101, 36, and 193 respectively. This method has the additional advantage, which is appreciated by the mother, that nothing except the nozzle of the douching syringe is introduced into the vagina, so that there is no need to rupture the hymen.

RELAPSE

This was a not uncommon incident; 14 of the 20 cases relapsed within a short time of returning home. Some of the relapses may be explained by the fact that the children had gone home almost straight from bed, and we have observed that even after several negative daily swabs have been obtained when the child is in bed, gonococci may reappear in the swabs when it is allowed up. In at least one of the cases there was a strong presumption that the child had a reinfection from home conditions rather than a relapse, and we now endeavour to insist upon the parents and other members of the household producing satisfactory medical reports of their condition before the child is allowed to return home.

The relapses occurred from 23 days to 4 months after the last positive swab, the commonest time being about 2 months. It is noteworthy—though our numbers are too few to allow of any conclusion being drawn from them—that four of the six cases which did not relapse had taken the œstrin by mouth. As a rule the relapses responded readily to a further short course of œstrin either by mouth or by a single large injection (50,000 units), and it was not found necessary to readmit any case to the ward.

We have tried œstrin both by mouth and by injections in a few cases of intractable non-gonococcal vulvo-vaginitis in which the ordinary methods of treatment had failed to bring about a cure. In all three cases the discharge ceased after 8–12 injections of 1000 units given on alternate days, and in two of the cases no relapse occurred after eight months; in the third case the discharge reappeared after that time, and the child is still under treatment.

CONCLUSION

We have been so impressed by the value of œstrin in the treatment of gonococcal vulvo-vaginitis that we have thought it desirable to publish our results,

although our cases have not been very numerous, and the dosage was somewhat tentative in the early cases. The main features of the treatment are: (1) that it is shorter than other methods; (2) it is easy of application as the drug can be given by mouth; and (3) it quickly diminishes the discharge and thereby reduces the infectivity of the patient and the risk of spreading the disease.

We should like to express our indebtedness to Dr. Alison Macbeth for her interest in the investigation and to the directors of the Organon Laboratories for the liberal supply of œstrin preparations placed at our disposal.

THE RESULTS OF RADIOTHERAPY IN CERVIX CANCER

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A necessary part of cancer investigation is to review from time to time the results which have been recorded by leading centres treating malignant disease. During the last few years statistics on an appreciable scale have become available from clinics the world over, and it is of interest to examine the results from such clinics, not only in order to evaluate radiotherapy but also to make a comparative study of the differences revealed from the clinics themselves.

The literature on cancer of the cervix treated by radiotherapy is now enormous and deals with thousands of cases. The data are concerned with the results of treatment carried out from about 1913 to 1928, the latter date being determined by the prevalent custom of reporting results only when five years have elapsed since treatment. For this reason also there are comparatively few figures which show the influence on the survival-rate of the most recent advances in technical methods.

The figures which have been collected together in this paper have been drawn from hospitals all over the world, many of which have been treating cervix cancer with radiotherapy since this method was first used. In Table I. some of the recent results recorded by leading centres are given; they refer to cases which have mostly been treated with radium combined with supplementary external irradiation. In Table II. the results have been collected separately of cases which have been treated with radium alone. To obtain some of the figures it has been necessary to go back to the early records.

In cervix cancer the chief direction along which attempts have been made to improve treatment has been in perfecting the means of administering depth doses of X rays. The well-known limitations of radium therapy have led all the better equipped clinics to supplement radium treatment with external irradiation, either with X or gamma rays, and most of the larger centres now treat only the earliest cases with radium alone. At the present time, however, there are many hospitals not equipped with facilities for giving modern deep X ray therapy, and actually this treatment is available for only a very small percentage of the patients who have pelvic cancer. It is therefore of real importance to consider what radium has achieved when it has been the only means of treatment. It is also of importance to compare the best results which have been obtained by the use of radium only with the recent results of the most highly equipped centres.

COMPARISON OF RESULTS AND STAGE OF THE DISEASE

It has long been recognised that one of the chief difficulties in cervix cancer, in determining the value of different methods of treatment, is the lack of uniformity in presenting results and defining the stage of the disease. The classification of cases suggested by the radiological subcommittee of the League of Nations was put forward in 1929, but all available data refer to the methods in use before that date, and the figures are clearly not strictly comparable. They have to be considered individually in relation to the particular interpretation placed on "operability" and in relation to the working conditions of each centre. On reference to Table I. it will be seen that there is a very large range in the operability-rate without a corresponding range in the total survival-rate.

Table I.—*Cancer of the Cervix Treated with Radiotherapy: Five Year Results*

Author and clinic.	Total cases treated.	"Operability" or Groups 1 and 2.	Living all cases treated	Period.
			No. and per cent.	
Burnam (1932), H. Kelly Hosp.	262	20·6% 54 : 262	60 (22·9)	1925–1927
Healy (1928, 1931), Mem. Hosp., N.Y.	374	28% 105 : 374	97 (25·9)	1922–1924
Schmitz (1933), Mercy Hosp., Chicago.	156	16·6% 26 : 156	35 (22·43)	1924–1927
Stevens (1928), Mont Clair Hosp., N.J.	79	44·3% 35 : 79	26 (32·9)	1918–1922
Masson (1934), Bowing and Fricke, Mayo Clinic.	1242	—	260 (20·93)	1910–1927
Heyman (1932, 1934), Forssel, Radiumhemmet.	1039	26·7% 309 : 1157 (1914–1926)	235 (22·6)	1921–1928
Regaud (1932), Lacassagne (1932), Institut du Radium.	243	35·3% 86 : 243	84 (34·5)	1924–1926
Hartmann (1932), Hôtel-Dieu.	155	20·2% 31 : 155	47 (30·3)	1924–1926
Laborde (1931), Villejuif.	132	25·7% 34 : 132	35 (26·5)	1925–1927
Voltz (1932, 1934), Doederlein, Münich.	720	44% 322 : 720	173 (24)	1924–1928
Wittenbeck (1933), Wintz, Erlangen.	394	18·7% 74 : 394	98 (24·9)	1923–1928
Eymer (1933), Dietel, Heidelberg.	131	—	34 (25·9)	1925–1927

A general survey of the data in this Table shows us that the proportion of patients living at the end of five years at no clinic falls below 20 per cent., and in three instances the figure rises to over 30 per cent., the highest actually being that of the Institut du Radium with a figure of 34·5 per cent. This figure, it will be noticed, had been obtained with an operability (Groups 1 and 2) of over 35 per cent. At this time, according to Lacassagne, not more than 3 per cent. of applicants were being refused treatment because of the advanced stage of the disease. It may be remarked that these results were obtained during the years 1924–1926, and the radium technique had definitely been established since 1921 on the lines of what is generally known as the Paris technique. Supplementary external irradiation was begun towards the end of 1923 and was afterwards used for all except the early cases of Group 1, of which there were comparatively few.

We may now turn to the data in Table II. The figures from Radiumhemmet call for some comment. It will be noticed that among the patients treated in 1914–1915 there is a survival-rate ranging from 27 to 32 per cent. These early results of Forssel's, though concerned with comparatively few cases, were obtained at a time when surgery was the treatment of choice, and only the more advanced cases were referred for radium treatment. At this centre these results have never since been equalled. The highest annual survival-rate obtained after 1920 has not exceeded 25 per cent. notwithstanding a rising operability-rate. The marked reduction in the number of survivors in 1916 and 1917 is attributed partly to a reduction in dosage, but more especially to a change of personnel. A similar reduction occurred at Kehrer's clinic in the period 1918–1920, but was due in this case to a greatly increased dosage. The figures given in Table II. for the Institut du Radium are the only data which have been found which show the results that have been obtained from the Paris technique without the influence of supplementary external irradiation; but they include

TABLE II.—*Cancer of the Cervix Treated with Radium only: Five Year Results*

Author and clinic.	Total cases treated.	"Operability" or Groups 1 and 2.	Living all cases treated	Period.
			No. and per cent.	
Heyman (1930),	26	11·5%	7 (26·9)	1914
Forssel,	40	2·5%	13 (32·5)	1915
Radiumhemmet.	47	6·4%	4 (8·5)	1916
	63	11·1%	9 (14·3)	1917
Heyman (1931).	270	32·5%	54 (20)	1918–1920
Regaud (1932),	36	75%	7 (19)	1921
Lacassagne (1932),	63	50·8%	17 (26)	1922
Institut du Radium.	74*	43·2%	23 (31)	1923
Ward (1933), Farrar, Women's Hosp., N.Y.	255	18%	62 (24·3)	1919–1927
Kehrer (1922), Dresden.	129	45·7%	36 (27·9)	1915–1917
Marie Curie Hospital (1934), London.	73	16·4%	20 (30·1)	1925–1926
	57	17·5%	16 (29·8)	1927
	85	29·4%	36 (42·3)	1928

* At the end of this year 17 of these cases were treated with X rays.

17 cases, out of the total of 74, which were treated with X rays at the end of 1923, the results of which are not given separately. During these years the operability-rate reached as high as 75 per cent. owing to the exclusion of the advanced cases.

The figures for the Marie Curie Clinic, London, show that in the first year of their work, with an operability-rate as low as 16·4 per cent., there was a survival-rate of 30 per cent. By 1928 the operability-rate had risen to 29·4 per cent., with a rise in the survival-rate to 42·3 per cent. Now that surgery is no longer the treatment of choice the operability-rate has risen still further, in 1933 to 35·4 per cent., practically the same as the present operability percentage for Radiumhemmet and the Institut du Radium. At this centre also the number of cases refused treatment because of the advanced stage of the disease has not exceeded 3 per cent. of the total applicants.

CONCLUSIONS

(1) The use of supplementary external irradiation with X or gamma rays has enabled many centres to improve their general survival-rate to 24 per cent. and over, a figure which they were unable to reach when the application of radium to the primary site was their only method of treatment.

(2) By perfecting the methods of distributing the radium and adapting the treatment to the particular conditions of individual cases, it has been possible at some clinics to obtain with the use of radium alone a survival-rate which, taking into consideration the low operability and the general type of case, has not yet been surpassed.

(3) There are as yet no figures to show what results can be obtained by combining a radium technique which has given the best results with supplementary external irradiation.

REFERENCES

Burnam, C. F.: Surg., Gynec., Obstet., 1933, lvi., 427.
Eymer, H.: Strahlentherapie, 1933, xlvii., 119.
Hartmann, H.: Bull. de l'Acad. de Méd., 1932, cviii., 1012.
Healy, W. P.: Amer. Jour. Obstet. Gynec., 1928, xvi., 594: Ann. Surg., 1931, xciii., 451.
Heyman, J.: Amer. Jour. Obstet. Gynec., 1930, xix., 591; Ann. Surg., 1931, xciii., 443; Acta Radiol., 1932, xiii., 329; Berät. f. Styr. f. Cancer. i. Stockholm, K. L. Beckmans Boktryckeri, 1934.
Kehrer, E.: Arch. Gynäk., 1922, cxvii., 261.
Laborde, S.: Jour. Méd. Français, 1933, xxii., 93.
Laborde, S., and Wickham, Y. L.: Bull. de l'assoc. française pour l'étude du cancer, 1931, xx., 235.
Lacassagne, A.: Brit. Med. Jour., 1932, ii., 912.
Marie Curie Hospital: Brit. Emp. Canc. Camp., Annual Report, 1934.
Masson, J. C.: Surg., Gynec., Obstet., 1934, lviii., 453.
Regaud, C.: Bull. Acad. de Méd., 1932, cvii., 611.
Schmitz, H.: Amer. Jour. Obstet. Gynec., 1933, xxv., 10.
Stevens, J. T.: Radiology, 1928, x., 57.
Voltz, F.: Brit. Med. Jour., 1932, ii., 907; Strahlentherapie, 1934, l., 576.
Ward, G. G.: Surg., Gynec., Obstet., 1933, lvi., 434.
Wittenbeck, F.: Strahlentherapie, 1933, xlvii., 631.

A CASE OF AGRANULOCYTOSIS TREATED WITH PENTNUCLEOTIDE*

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MUCH has lately been written on the disease syndrome known variously as agranulocytosis, agranulocytic angina, primary granulocytopenia, and malignant neutropenia. An extensive review of recorded cases by P. Plum was published in THE LANCET of Jan. 5th, and a leading article, together with two other papers on the disease, appeared on Jan. 26th. The results of Pentnucleotide therapy have been variable in the hands of different workers, but there is a consensus of opinion that in adequate dosage this remedy is probably the most effective at present available. As mentioned in the leading article, some of the failures with pentnucleotide may have been due to the difficulty of distinguishing true agranulocytosis from atypical (aleukæmic) leukæmia: nucleotide therapy is admitted to be useless for the latter disease. It has been felt justifiable to publish the present case as one in which the patient seemed to respond directly to pentnucleotide treatment not only in his original attack of agranulocytosis but also in a relapse. The discovery that he had been taking amidopyrin in small doses for six months before his illness is also of interest, especially since this drug is a constituent of various widely advertised proprietary medicines.

* A report to the Therapeutic Trials Committee of the Medical Research Council. The pentnucleotide used in treatment was manufactured by the Smith, Kline, and French Laboratories, Philadelphia, Pa., and supplied to the Committee by Messrs. Menley and James Ltd.

CASE RECORD

The patient, a butcher aged 53, was admitted to Crumpsall Hospital, Manchester, on July 17th, 1934. He stated that six months before admission he had begun to lose his sense of taste and his appetite, and to lose weight. Five months later he noticed a swelling on the right side of his neck and had a slight sore-throat with some difficulty in swallowing. These symptoms had become more severe during the last fortnight. On the day of admission he had felt very weak, collapsed at work, and lost the use of his limbs.

His previous health had been excellent and he had not consulted a doctor for 20 years; but six months before the onset of symptoms (12 months before admission to hospital) he had felt "a bit run down," and had started to take six Yeast-Vite tablets daily. He had continued to take this preparation in the same dosage until admission to hospital. The preparation, according to the formula printed on the box, contains, in addition to yeast, phenacetin, bromides, and 12·5 per cent. of amidopyrin. Since, therefore, the tablets weigh grs. 6 each, the patient had been taking amidopyrin grs. 4½ daily for a year.

On admission he appeared extremely ill, the temperature being 103° F. and the pulse-rate 100. He looked very toxic and had obviously lost much weight. He complained of great weakness, hoarseness, and difficulty in swallowing. The tongue was very dirty, but there was no evidence of sore-throat. A few moist sounds were present in the chest and he expectorated a moderate amount of muco-purulent sputum. Neither the spleen nor the liver was enlarged, and no enlargement of lymphatic glands was detected. There was a small septic focus on the dorsum of the right second finger, caused by a trivial injury at work two weeks previously.

As the condition did not improve after four days in hospital, and the local septic focus was obviously insufficient to account for the severe general symptoms, the case was further investigated, and a blood count gave the following figures:—

Red cells	4,360,000 per c.mm.	Polymorphonuclears	Nil.
White cells	600 per c.mm.	Lymphocytes	80 %
Hæmoglobin	88 %	Eosinophils	Nil.
Colour-index	1·0	Basophils	Nil.
Blood-platelets	Plentiful	Monocytes	20 %

Pentnucleotide, 40 c.cm., was given intramuscularly on the fifth day, followed by 20 c.cm. daily for two days, and then 10 c.cm. daily for four days with a break of one day. The granulocytes increased rapidly, reaching a maximum of 5917 per c.mm. on the fourteenth day—i.e., nine days after commencing treatment with pentnucleotide. The rise coincided with a marked improvement in the patient's condition. The temperature returned to normal in four days and remained steady for a fortnight. From the fourteenth day onwards the granulocytes decreased and the marked drop from 4234 to 1118 per c.mm. between the seventeenth and twenty-first days coincided with a relapse in the general state. The temperature rose to 102°, the cough, sputum, and hoarseness recurred, and the condition resembled that on admission.

A second course of treatment with pentnucleotide was begun on the twenty-third day. Four daily doses of 20 c.cm. and two of 10 c.cm. were given with an immediate improvement in symptoms and a gradual rise in the number of granulocytes. The cough and sputum again disappeared, the temperature subsided, and the hoarseness improved. Further progress was uneventful and the patient was discharged from hospital 37 days after admission. The blood counts, of which details are given in the accompanying Table, show well the increase in the total granulocytes following the administration of pentnucleotide; the fact that this result was repeated after a relapse would seem to indicate that the pentnucleotide was itself responsible for the improvement noted.

In the blood films during the first few days and during the relapse, the granules in the polymorphonuclears as stained by Leishman's method were fewer in number, slightly larger and more basophilic than normal—a condition often noted in severe toxic conditions. A myelocytic response, noted by some observers to follow the administration of pentnucleotide, was not present in this case; but after the second course there was an eosinophilia reaching a maximum of 7 per cent. of the total leucocytes.

Since discharge on August 23rd, 1934, the patient has been in very good general health, feels perfectly fit, and has resumed work, but at the time of writing this report (January, 1935) he had still a low polymorphonuclear percentage with a relatively high lymphocyte count.

Day.	c.cm. pentnucleotide.	White blood-cells.	Differential count: Percentages; total number per c.mm. (*in italics*).								
			Polymorphonuclears.	Meta myelocytes.	Myelocytes.	Myeloblasts.	Eosinophils.	Basophils.	Total granulocytes.	Lymphocytes.	Monocytes.
4	Nil	600	..	..	..	..	..	..	..	80	20
										480	*160*
5	40	800	3	..	..	..	..	..	3	79	18
			24						*24*	*632*	*144*
6	20	700	..	..	..	..	..	..	..	..	..
7	20	900	29	..	..	..	..	..	29	59	12
			261						*261*	*531*	*108*
8	10	1800	40	..	..	2	1	..	43	44	12
			720			*36*	*18*		*774*	*792*	*216*
9	10	2100	50	..	..	..	..	1	51	39	10
			1050					*21*	*1071*	*819*	*210*
10	Nil	4000	63	..	..	1	1	..	65	30	5
			2520			*40*	*40*		*2600*	*1200*	*200*
11	10	4100	63	..	..	..	..	..	63	31	6
			2583						*2583*	*1271*	*246*
12	10	6100	60	..	..	1	..	..	61	33	5
			3660			*61*			*3721*	*2013*	*305*
14	Nil	9700	60	..	..	..	1	..	61	36	3
			5820				*97*		*5917*	*3492*	*291*
15	Nil	6800	56	..	..	..	..	..	56	39	5
			3808						*3808*	*2652*	*340*
17	Nil	7300	57	..	..	..	..	1	58	36	6
			4161					*73*	*4234*	*2658*	*438*
21	Nil	4300	20	3	..	..	1	2	26	60	14
			860	*129*			*43*	*86*	*1118*	*2580*	*602*
22	Nil	4200	17	8	1	..	1	1	28	61	11
			714	*336*	*42*		*42*	*42*	*1176*	*2562*	*462*
23	20	2400	25	6	..	..	3	1	35	53	12
			600	*124*			*72*	*24*	*820*	*1272*	*288*
24	20	1800	32	3	1	..	12	..	48	41	11
			576	*54*	*18*		*216*		*864*	*738*	*198*
25	20	2400	37	3	..	..	4	2	46	43	11
			888	*72*			*96*	*48*	*1104*	*1032*	*264*
26	20	5800	41	2	..	1	4	1	49	38	11
			2378	*116*		*58*	*232*	*58*	*2958*	*2204*	*638*
27	10	5700	44	6	2	..	5	1	58	35	7
			2508	*342*	*114*		*285*	*57*	*3306*	*1995*	*399*
28	10	7400	48	..	2	..	6	..	56	38	6
			3552		*128*		*444*		*4124*	*2812*	*444*
29	Nil	8100	52	2	..	..	5	..	59	38	3
			4212	*162*			*405*		*4779*	*3078*	*243*
30	Nil	8900	48	1	2	1	6	2	60	35	5
			4272	*89*	*178*	*89*	*534*	*178*	*5340*	*3115*	*445*
31	Nil	9400	61	1	..	..	6	..	68	28	4
			5734	*94*			*564*		*6392*	*2632*	*376*
33	Nil	11200	60	4	..	1	2	1	68	27	5
			6720	*448*		*112*	*224*	*112*	*7616*	*3024*	*560*
35	Nil	9400	48	3	..	..	5	1	57	38	5
			4512	*282*			*470*	*94*	*5358*	*3572*	*470*
37	Nil	8300	57	2	..	1	2	2	64	33	3
			4731	*166*		*83*	*166*	*166*	*5312*	*2739*	*249*
42	Nil	6200	38	3	..	..	1	2	44	51	4
			2356	*186*			*62*	*124*	*2728*	*3162*	*248*
45	10	5100	20	4	..	..	7	3	34	62	4
			1020	*204*			*357*	*153*	*1734*	*3162*	*204*
49	Nil	5100	10	3	..	..	7	2	22	67	11
			510	*153*			*357*	*102*	*1122*	*3417*	*561*
52	20	2900	16	2	3	..	6	..	27	64	9
			464	*581*	*87*		*174*		*783*	*1856*	*261*
60	Nil	5600	20	2	..	..	5	..	27	65	8
			1120	*112*			*280*		*1512*	*3640*	*448*
67	Nil	9000	18	..	..	..	5	..	23	72	5
			1620				*450*		*2070*	*6480*	*450*
75	Nil	4900	37	5	..	..	4	1	47	47	6
			1813	*245*			*196*	*49*	*2303*	*2303*	*294*
81	Nil	6200	20	..	..	..	3	..	23	73	3
			1240				*186*		*1426*	*4526*	*186*
95	Nil	6100	32	..	..	..	5	..	37	58	5
			1952				*305*		*2257*	*3538*	*305*
116	Nil	6800	35	..	..	..	4	..	39	58	3
			2380				*272*		*2672*	*3944*	*204*

Turck cells were found on the following days: 8th, 18 (1 per cent.); 26th, 116 (2 per cent.); 42nd, 62 (1 per cent.); and 81st, 62 (1 per cent.).

COMMENT

The case on which this report is based shows the beneficial effect which may follow pentnucleotide therapy in agranulocytosis. The relapse which occurred gave opportunity for a second demonstration, in the same patient, of a granulocytic response after treatment with this product. It seems likely that the

ætiological factor in this case was amidopyrin, which had been taken over a long period in small doses contained in a publicly advertised "tonic."

I wish to thank Dr. W. A. Ramsay, medical superintendent of Crumpsall Hospital, for permission to publish this case.

CASE OF AGRANULOCYTIC ANGINA

By F. T. Ranson, M.B. Belf., F.R.C.S. Edin.

It is only within recent years that agranulocytic angina has been reported in British journals. The following is an account of a typical case.

Miss A., arrived in Shanghai in November, 1934, after unpleasant experiences with Communists in Western China. She looked pale, ill, and debilitated when she first sought advice concerning a lump in the right breast. A diagnosis of early carcinoma was made, and on Nov. 23rd, 1934, a radical breast operation was carried out. Radium, 30 mg., was inserted in 2- and 3-mg. needles surrounding the operation field and left in for one week. The needles caused considerable discomfort, for which Amytal Compound was prescribed, and the patient continued to take, on an average, two capsules a day for over a month.

On Thursday, Jan. 3rd, 1935, she attended a meeting, sat in a draught, and came home feeling cold and shivery. On Friday morning she complained of a sore-throat and had a temperature of 103° F. Examination revealed little, the throat was slightly red, and there were no signs in the chest. A diagnosis of "flu" was made and some aspirin prescribed. After a bad day and night the patient was found the following morning looking extremely toxic and ill. Temperature 104° F.; pulse rapid and feeble. The throat was more red and on both tonsils was a little greenish-grey exudate. Swabs were taken and I then asked my colleague, Dr. L. McGolrick, to see the case. On hearing the symptoms, he at once suggested the possibility of agranulocytosis and asked for a blood count. This was ordered and that afternoon a very surprised pathologist telephoned to say that the white cell count was 200 per c.mm. and that no neutrophils could be found on the slide. Red cells 3,800,000; no abnormalities in these cells noted.

It was decided to treat the case vigorously, and that evening a transfusion of 500 c.cm. citrated blood was carried out and to the blood was added 20 c.cm. of pentnucleotide. A severe reaction, probably due to the pentnucleotide, followed, but the next day the patient looked better, although the throat condition was much worse. Membrane covered both tonsils and had spread to the soft palate and posterior pharyngeal wall. As the swab showed hæmolytic streptococci, antistreptococcal (scarlatina) serum was administered and two 10 c.cm. doses of pentnucleotide given intramuscularly. A blood count done on this day showed white cells 380 per c.mm. with 6 per cent. neutrophils.

On Monday, Jan. 7th, the throat was still worse; at the edge of the membrane a black line had appeared; the breath was exceedingly foul and there were large masses of glands on both sides of the neck. Another transfusion was carried out and the pentnucleotide continued intramuscularly. A blood count that afternoon showed 600 white cells with neutrophils 3 per cent. She died at 5 A.M. next morning: when she was seen at 3 A.M. portions of the fauces and pharynx were in process of sloughing off.

In this case most of the known ætiological factors were present. The patient was a middle-aged female, debilitated by trying experiences followed by a severe surgical operation, and had been taking moderate doses of amytal compound over a fairly long period. Drugs in whose composition the benzene nucleus occurs are regarded as being possible ætiological factors, and although amytal compound is not a true benzene derivative, yet it contains amidopyrin, and this latter drug has recently fallen under suspicion.

In the first two days of the illness the symptoms were out of all proportion to the amount of membranous formation in the throat. The white cell count of 200 is extraordinarily low, and it is hard to explain why it rose steadily. Pentnucleotide is not supposed to produce a leucocytosis for five days, and a transfusion of 500 c.cm. of blood is said only to raise the white cell count by 6 per cent. Some of the recorded cases have recovered without any specific therapy having been employed, but it is very doubtful whether a fulminating case of this kind could recover, with or without treatment.

PLASTER-OF-PARIS IN THE TREATMENT OF COLLES'S FRACTURE

A SIMPLE TECHNIQUE USED IN 50 CONSECUTIVE CASES

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In his opening address to the section of orthopædics at the British Medical Association centenary meeting Platt[1] describes the treatment of fractures of the Colles type as having passed through three principal stages. The first stage was one when various ingenious splints were devised in the hope that bandaging the injured limb to them would effect the reduction and cure. While the splints—e.g., Carr's, the pistol splint, twisted metal splints—were sound in design, the results of treatment were poor because adequate reduction of the deformity had never been obtained. During the second stage in the history of treatment attention was focused on accurate anatomical reduction, rather to the exclusion of fixation and after-treatment. Indeed, some standard surgical text-books have not yet passed this stage, stating that once a Colles type fracture has been reduced there is little danger of the deformity recurring, and that the method of splintage is unimportant. We cannot agree with this teaching, having seen deformity recur even a fortnight after satisfactory reduction, owing to the patient discarding his splint, or to injudicious handling by a masseuse. The third and present-day stage of treatment stresses the need for accurate reduction, satisfactory fixation, and after-care.

All surgeons agree that perfect anatomical reduction of the deformity is essential. We do not propose therefore to describe either the methods or criteria of a successful reduction. This has been done many times, and we refer the reader to an excellent illustrated description by Edwards and Clayton.[2] It is with the value and use of plaster-of-Paris as a splint for these cases that this paper is concerned. In our opinion plaster-of-Paris applied in the manner subsequently described is the simplest, most comfortable, and most reliable method of securing fixation of these fractures. It is further eminently suited for routine clinic work, and it can readily be applied by the general practitioner who may not have access to a reliable masseuse.

We do not of course attempt to claim any originality in the use of plaster-of-Paris as a fixating agent, but

we are surprised that plaster is so infrequently used for these cases in England. While many surgeons mention plaster-of-Paris as a suitable splint, in practice they appear to use some other method. Thus Platt [1] mentions the use of plaster strips in certain cases only—i.e., not as a routine—while Blundell Bankart [3] refers to the use of split padded casts. (Splitting the cast in our opinion destroys its value.) Page and Bristow [4] describe a padded plaster similar in outline to the one we have been using, but it is padded, and they reserve it for cases of fracture of the carpal bones. W. Mitchell Smith [5] uses plaster as a routine. He describes an encasing plaster which reaches to the level of the distal row of the carpal bones but does not hold the thumb or the palm of the hand. Such a splint must be difficult to mould accurately at its lower end, while if it becomes slightly worn at the base of the thumb or does not fit there, the fixation is unsound. Mitchell Smith claims excellent results with his cast, but we feel that the method to be described has the merits of greater fixation and simplicity. Prof. Böhler [6] uses plaster as a routine measure but his technique is rather more elaborate than ours, while he frequently splits his cases and permits removal.

An article by Holzman,[7] published since the foregoing was written, advocates the routine use of plaster-of-Paris. He uses a plaster splint applied in two stages. This differs from the one to be described in having no bar across the dorsal aspect of the carpus. In our opinion this is liable to be unsatisfactory when the case becomes worn or a little loose, as dorsiflexion at the wrist with recurrence of displacement might then take place. We agree with his finding that when fixation is inadequate deformity may recur even after the lapse of two or three weeks, a risk that materially enhances the danger of massage. d'Abreu,[8] commenting on Holzman's paper, states that he has adopted Böhler's method of plaster application. We do not prefer this method, as stated above, and we cannot agree with his rather sweeping condemnation of Carr's splint. We find the latter very convenient as a temporary measure, especially until perfect reduction has been confirmed by X ray. This saves the occasional discomfort to the patient and ignominy to the surgeon of having to remove a plaster case for a second attempt at reduction.

FIG. 1.—Patient with double Colles's fracture wearing plaster cases. There is very little disability and she can use the hands for ordinary tasks. The everted rim to the plaster can be seen.

ADVANTAGES CLAIMED FOR THE NON-PADDED CAST AS APPLIED BY THE METHOD TO BE DESCRIBED

1. *A free use of the extremity.*—As soon as the case is dry the patient may use his fingers freely. This prevents stiffness of the fingers and thumb far better than any exercises on a Carr's splint. A sling is not worn, and the patients can write letters and attend to business. Some in our series have driven their motor-cars; one, a typist, wanted to return to her work on the second day after the accident; one, a dental surgeon, stated that after a day or two "practising in the plaster" he could undertake the ordinary manœuvres of dental practice. Free use of the arm prevents stiffness occurring in the shoulder and elbow—a complication not uncommon in elderly patients who have been resting their splinted forearm in a sling.

FIG. 2.—Same patient as Fig. 1, to show the power of the grip.

2. *Comfort.*—It is of course true that pain which occurs after treatment has been instituted usually means failure of adequate reduction. We have, however, seen cases treated on a Carr's splint develop sores over the anterior aspect of the lower end of the radius. These sores are due to the cotton-wool padding having "bedded down" on the splint. In our series, in the earlier cases a sore place occurred between the thumb and the first finger. With attention to this point and general improvement in technique these sores were easily prevented and no sore places occurred in the subsequent cases. The cases are very comfortable and light. A number of our patients had had previous Colles's fractures on the same or other wrist treated by wooden splints, and they all stated that they much preferred the "plaster treatment."

3. *Security.*—Apart from the feeling of security given by a well-fitting plaster case, it also has in its favour that it cannot come undone. It cannot be interfered with without showing signs of such interference, and it requires little attention beyond a weekly inspection. Gutter splints have to be readjusted or removed for massage, a procedure not without risk. We have been unfortunate enough to have seen fractures which had been perfectly reduced (confirmed by X ray) slip back owing to injudicious removal of the splint for massage. Further, splints are not always properly reapplied after massage, and when using twisted metal splints (Robert Jones) we have had patients return with the wrong splint on top. These disasters cannot occur if a plaster case is worn.

4. *The need for massage reduced or abolished.*—Except in the elderly or those with previous signs of arthritis our patients required no massage. The average patient on removing the case had 50 per cent. of normal wrist movement at once (movements of the digits were already full). Full wrist movement returned in a couple of weeks after removal of the plaster. The absence of need for massage means a considerable saving of expense to the private patient and of time in hospital practice. In our opinion

massage is not without risk as mentioned under 3 above.

5. *Double Colles's fracture.*—An adult with both wrists bandaged to Carr's splints is a pitiable sight. In our series there were three cases of double Colles's fracture. Two were treated with bilateral plaster cases, while the third had a case on one side and a Carr's splint on the other side. Wearing the plaster cases the patients were able to dress themselves, attend to their toilet, and the numberless little things that make for comfort. The patient with the two sides treated differently decidedly preferred the plaster side.

6. *A definite end-point in treatment.*—While we do not claim better results from the method, believing that the end-result in the main depends upon the primary reduction, we do claim a shorter period of disability and a more useful period of disability. The patient has to work out his own cure. His plaster case is applied, and he is told to use the hand for everything possible. At his weekly attendance the case is examined, the grip and range of digital movements tested, and the patient encouraged. The patient avoids the "fracture psychology" from the start. When the plaster case is removed he is told to use the hand freely, and is seen once or twice more to ensure that full movement is present. The patient does not expect further treatment, and by then has regained full movement for himself. We found that when cases were sent to a massage department a definite "end-point" was difficult to establish. Patients always liked to return for "one more treatment," and the malingering type of patient could produce some stiffness that required some more massage and a certificate.

In our opinion the comfort of the splint combined with the short definite period of supervision makes the method superior to other forms of treatment.

FIG. 3.—Applying the plaster case to the second side in the patient shown in Figs. 1 and 2. The fingers are supported on the other limb, which can be seen to be already in plaster.

DETAILS OF TREATMENT AND OF THE APPLICATION OF THE PLASTER CASE

In our clinic we have employed the following routine with occasional modifications to suit individual cases.

1. The deformity (if present) is reduced by one of the standard methods.

2. Plaster is applied in the following manner. The patient and surgeon are seated comfortably facing one another. If a nurse is available she stands to one side of the patient and holds the outstretched finger-tips and steadies the elbow-joint on the affected side. It is not necessary to have a nurse or assistant however, since the patients can hold their fingers with the unaffected hand; 2½ inch width plaster bandages 4 yards long are used. Two such bandages are usually sufficient, the surgeon soaking them himself in a pail on a low stool by his chair. No padding, vaseline, shaving, or any other form of skin preparation is required. The bandage is then applied, each turn being smoothed out on the fore-

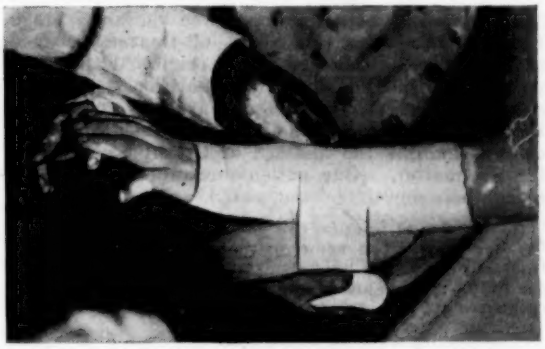

FIG. 4.—The same patient. The plaster is nearly complete. The final result is now produced by smoothing and everting the edges and general modelling.

arm. The extent of the plaster is clearly shown in the photographs.

Special points to observe in the application are: (*a*) The rim at the upper end of the case is everted by running a finger under it, so that a sharp edge will not cut the skin, nor hairs stick to it. (*b*) The bridge across the palm of the hand and around the cleft between the thumb and first finger is carefully moulded to fit. The wrist should be straight, neither dorsiflexed nor palmar flexed. The bridge should leave the knuckles free on the dorsum and not extend beyond the proximal transverse crease in the palm. (*c*) Trimming with knife or scissors is not required. All the "fitting" is done during the application, and afterwards by smoothing with the fingers. (*d*) The plaster is very carefully moulded over the fractured portion of the radius.

The case is held by the surgeon until it is set. The patient is instructed to keep the arm in a sling for 24 hours to allow it to dry. He is then to discard the sling and use the limb as freely as possible.

Application of the case takes 15 minutes, spent as follows: 5 minutes in bandaging, 5 minutes in moulding and everting the edges, 5 minutes holding till set. After experience is gained this time can be shortened still further. The case is very light. Using Cellona plaster bandages a case for a woman requires one bandage and weighs 3½ oz., while for a male two bandages are required, weight 7 oz. This is less than the weight of a Carr's splint and padding to fit such cases. The case is worn for two to four weeks, depending on the severity of the initial lesion. The limb is inspected weekly. Occasionally parts of the case have worn through from vigorous use before the end of the period of splintage and a second case has had to be applied. When the plaster was removed patients wore a leather wrist strap or an elasto-crepe bandage.

3. The patient is sent for an X ray photograph to confirm reduction. (Note.—If there was doubt about the adequacy of the reduction, or if the patient was seen at some inconvenient time, it was found useful to bandage the limb to a Carr's splint until the confirmatory X ray had been seen.)

At no time was it found necessary to remove a plaster case because of swelling. This agrees with our experience of fractures about the ankle-joint—namely, that if they are fully reduced and properly fixed further swelling does not occur.

Three patients in the series required the removal of the cases because the second radiogram still showed deformity. This was in our opinion due to failure of the primary reduction and not to a recurrence. No case of recurrence in the plaster was observed with Colles's fractures. (Using the method for a case of slipped

epiphysis a recurrence in the plaster was observed; we attribute this to a faulty plaster.)

ANALYSIS OF RESULTS IN 50 CONSECUTIVE CASES

The results are classified according to the standards Platt [1] uses. It is important to point out that our results quoted are taken on an average three months after the period of treatment, since most of the cases are of recent origin. Experience with other methods of treatment has led us to conclude that the later results are not worse than the results three months after treatment, and we cannot confirm the findings of Grasby [9] and Trick in this matter. (Our patients returned for review every three months for one year.)

(Only cases of fracture of the Colles type were included in the series. The same method was used for other fractures about the wrist, and of the lower one-third of the radius; these and fractures in children and displaced epiphyses are not included.)

The results were as follows:—

Total number of patients	50
Result—	
Excellent (including perfect)	40 = 80 %
Good (patient able to do original work but some slight objective or subjective defect)	3 = 6 %
Poor	7 = 14 %
Average period of immobilisation in plaster	21 days.
Extremes	32–14 days.

Analysis of the seven poor results

Case.	Age.		Period of physical treatment.
1	60	Unfit for general anæsthetic	2 mths.
2	47	Badly comminuted not reduced	1 mth.
3	49	Double Colles, one side perfect, one side poor *	None.
4	71	Unfit for general anæsthetic (attempted but anæsthetic discontinued) †	2 mths.
5	46	Slight dinner fork deformity reduced improperly (no details)	None.
6	65	Unfit for general anæsthetic †	2 mths.
7	49	Improperly reduced (no details)	None.

* This side was not fixed in plaster. Deformity recurred while under physical treatment (controlled by X rays).

† These would now receive local anæsthesia.

It is obvious that the cause in each of the seven cases of failure was persistence of deformity rather than the method of fixation.

The proportion of cases sent to the physical treatment department was 15 (30 per cent.) with an average attendance of 6½ weeks (longest 6 months, shortest 1 month). Of this number 6 were improperly reduced (see analysis of poor results). The average age of the other 9 patients was 61. Excluding the 6 cases mentioned above as improperly reduced, 9 out of 44 (or only 25 per cent.) required to attend the physical treatment department.

Period of disability.—The 35 patients who did not require physical treatment had a partial disability period averaging five weeks—viz., three weeks in plaster and two weeks under inspection afterwards. The actual total disability period would, however, be considerably less, because a definite number were at work while wearing the plaster.

The 15 patients who required physical treatment had an average disability period of 9½ weeks, the average period of disability for the whole series being therefore six to seven weeks. This compares very favourably with results from other clinics as far as we can ascertain them.*

* The report of the B.M.A. Committee on Fractures estimates the period of disability for these fractures as follows: those treated in an organised clinic, 7 weeks; those not treated in an organised clinic, 29 weeks. (Supplement to Brit. Med. Jour., Feb. 16th, 1935.)

Our thanks are due to the Middlesex county council for permission to publish some of the cases treated by us at the North Middlesex Hospital.

REFERENCES

1. Platt, H.: Brit. Med. Jour., 1932, ii., 288.
2. Edwards, H., and Clayton, E. B.: Ibid., 1929, i., 61.
3. Bankart, A. S. B.: Ibid., 1929, i., 491.
4. Page, C. M., and Bristow, W. R.: The Treatment of Fractures and Dislocations in General Practice, London, 1929.
5. Smith, W. M.: Brit. Med. Jour., 1929, i., 765.
6. Böhler, L.: The Treatment of Fractures, Vienna, 1929.
7. Holzman, S.: THE LANCET, 1934, ii., 598.
8. d'Abreu, A. L.: Ibid., 1934, ii., 957.
9. Grasby, E. D., and Trick, S. R.: Brit. Med. Jour., 1929, i., 391, 619.

GANGRENOUS APPENDIX REMOVED FROM A LUMBAR HERNIA

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ON Oct. 28th, 1934, a salesman, aged 31, was admitted to Charing Cross Hospital with symptoms of acute appendicitis.

The history was as follows. In 1928 he was in employment entailing heavy lifting, and while at work he noticed a pain in the right side of the small of the back; any effort caused increase of pain. He took to his bed and called in his doctor, who found a mass in the loin which could be reduced into the abdomen. He considered that the pain might be due to Dietl's crises, and treated the patient by raising the foot of the bed and by giving urinary antiseptics. The pain abated.

In 1932 he was admitted to one of the larger London hospitals with a diagnosis of "abdominal pain." He was under observation for eight days, when pyelograms showed no abnormality in the urinary tract, and a calcified mesenteric gland was seen "on the course of the right ureter." He was discharged.

In October, 1934, he was seized with pain in the abdomen referred vaguely to the region of the navel. There was nausea, but no vomiting; the bowels were opened once; there was no increased frequency of micturition and no dysuria. After six hours the pain was also felt on the anterior abdominal wall to the right of and slightly below the navel, and also behind in the right loin. Occasionally the pain shot down into the right groin.

Physical signs.—I saw him 36 hours after the onset; his temperature was 99° F., the pulse-rate 88, and respirations 20. The tongue was dirty and breath foul. There was a tender mass in the right loin posteriorly, which showed superficial œdema; it was not reducible. There was tenderness over the right side of the abdomen, most marked to the right of and slightly below the navel. Some rigidity was present. Per rectum nothing abnormal was felt, and there was no tenderness. The urine had no abnormal constituent.

Operation.—A right paramedian incision was made and the cæcum found high up on the posterior abdominal wall; one large and two smaller calcified lymphatic glands were felt, but the appendix was not found until the cæcum was displaced upwards. Some recent indurated adhesions were separated and a gangrenous appendix was removed from a hernial sac the size of a tangerine orange, which seemed to protrude over the iliac crest lateral to the quadratus lumborum—i.e., through the lumbar triangle of Petit. No attempt was made to repair the orifice, as the cæcum fell over the neck and so occluded it naturally. After the patient had recovered from the operation there was no sign of any sac in the loin.

Recovery was uneventful; a pyelogram was performed, and showed no abnormality save the three calcified glands.

Only the arrested descent of the cæcum permitted the appendix to enter the sac; the combination of high cæcum and lumbar hernia must be rare.

I am indebted to Mr. C. Jennings Marshall for permission to publish this case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

AT a meeting of this section on March 6th, the president, Mr. PHILIP TURNER, being in the chair, discussion turned on the

Training of a Surgeon

Prof. GREY TURNER said that the medical student should be given a thorough grounding in the principles of surgery, not merely an introduction to the technical part of operative surgery, so that he would know how to act in unusual circumstances. He should be thoroughly trained to show no hesitation when faced with a life and death emergency. He should be thoroughly drilled in minor operative surgery, and know what results his patients had the right to expect from surgical procedure. Some of those who intended to devote themselves entirely to surgery were content merely to become good technicians. But a surgeon should be a well-trained pathologist, a diagnostician, and also something of a physician; in the past many of the best type had evolved from general practitioners, and he illustrated the point with brief sketches from the lives of Paré, Syme, Paget, Macewen, and Fergusson. Many found their stimulus to surgery in preparing for a surgical fellowship examination. The most productive part of a surgeon's life was often when he was registrar, a post which provided early and valuable opportunities of practice; he recalled with gratitude his own seven years thus spent. Some had had the inspiration of apprenticeship to a great surgeon. Of paramount importance was a broad general education with a training in the methods of science and of the normal processes of life as revealed in a study of physiology. In the old days there had been a tendency to spend too much time on anatomy. Many would-be surgeons in their early days had monetary difficulties, and he thought sufficient appointments should be provided at hospitals and schools to prevent economic hardship. Every opportunity should be taken to become competent morbid anatomists and morbid histologists; surgical pathology should be in the hands of junior surgeons. Harvey Cushing, he remarked, did his own autopsies in neurological cases.

In training the surgeons of the future Prof. Grey Turner deprecated too great a rigidity in any system which might be devised; he disapproved of the precision and exactitude of the American training time-tables. Only suitable men should enter, and they should receive good training in observation, some branch of nature-study being especially desirable; carpentry would help to train the hand. These should be combined with initiation into the "grammar of science." Everything in the curriculum should be learned with an eye on the next step, but no step should be regarded as abandoned when the next was reached. It was, he thought, a mistake to do too much operating at first.

Dr. ARTHUR F. HURST regretted that so much of the preliminary work was now done at school, with the result that the general education of the student was not now as good as it was. Specialisation at an early date was deplorable. French and German should be included in early studies; lack of familiarity with those languages would rob the student and practitioner of much of the utmost value, which even a good translation would not make good. He favoured spending holidays with families in a foreign country. Every medical student in Scandinavia was required to read French, German, and English, and at the best American schools acquaintance with French and German was insisted on. The knowledge required of the student in anatomy and physiology should be of the practical kind; not an exercise in memory, but a training for future work. The ideal surgeon (following Lord Moynihan) was a physician who had been trained in the practice of surgery. Many operations were no more than incidents in the patient's course of treatment. Every man during his two years as surgical registrar should serve three months as a medical registrar. He would like to see surgeons pay periodical visits to physicians' wards, and vice versa, and to know that surgeons at least saw the autopsies done on their fatal cases.

Mr. J. PATERSON ROSS thought it was a mistake for a man to devote his attention particularly to surgery before graduation; he ran the risk of neglecting other things by concentrating on a narrow field. To familiarity with French and German he would add the history of science, including medicine, and a certain amount of exercise in the open air. To be a surgeon a man should be endowed with certain attributes of mind: he should have wisdom, resolution, and quick decision, and possess the faculty of self-criticism; but while recognising his errors it was essential for him to develop self-confidence. Every man who intended to be a surgeon should first be a house physician, and a revision of his preliminary science studies in the light of surgery was most valuable. No knowledge of pathology could compensate for a lack of dexterity; the surgical apprentice must be watched, assisted, and supervised by a master. All operations by the junior should be under supervision; without that he was unlikely to acquire the correct technique. He did not think it was possible or desirable for surgical technique to be acquired by operating on lower animals. There should be two years of devotion to laboratory work, under the supervision of a trained researcher. It was a mistake for a young surgeon to spend several years demonstrating regional anatomy. No one could expect to advance in every sector; a surgeon should work in a special field, in the hope of adding to knowledge in it. Some of his time should be devoted to a special clinic.

Mr. W. MCADAM ECCLES believed that those who had not inherent in them the inclination towards surgery would not be successes in the surgical world. In his early days he did not get many opportunities of operating; his seniors were keen on doing what operations were required, and the first assistants took what was left. When his chance came he was glad he had seized all his opportunities of operating on the dead subject. Training by means of cinema films had, he thought, come to stay. Few could witness an actual operation, but hundreds could see the film.

Prof. P. T. CRYMBLE (Belfast) considered that German and French should receive the constant attention of the schoolboy; he did not favour scientific training for him. It was, he thought, significant that no successful musician became a successful surgeon; if an intending surgeon studied music it should be singing, for all teachers should receive a course in voice-production. The under-

graduate curriculum was already crowded to its utmost, and those years were only a part of the 45 active years of a man's life after he left school. The most important part of his own training had been when he was a member of the staff, living in hospital; it took him out of his former introspection. After qualification, the man should have a year as house surgeon and a year as house physician. Another year spent at a continental centre, such as Vienna, was of great value. In his own school, anatomy was the great corridor leading to surgery. In Belfast the aim was to produce good general surgeons; the city had no specialists. The Government, public bodies, and the man in the street should be educated to realise that an efficient surgical service was not merely a question of marble halls and stainless steel, but was a question of men, and that many years of training were required under a master before a man was capable of taking charge of a surgical unit.

Prof. HAROLD COLLINSON (Leeds) remarked that in former days men who distinguished themselves in surgery were noteworthy for their breadth of intellectual outlook; he instanced Jessop, Mayo Robson, and Moynihan. As a teacher of surgery he could not now teach students as he would, because his wards were filled with cases that fell into so few categories, others having been sent to special departments. When a surgeon was in the house he should be given the opportunity of doing simpler operations, with the supervision and assistance of his chief if the chief could find time to give it. Promising men should be encouraged to go away to another hospital after having served a certain time, on the understanding that no one should step into their shoes while they were away; there was an unfortunate tendency to stay continuously at one post because of a feeling of insecurity. Nothing was so educative as watching other people work, and seeing how they met unexpected difficulties.

Mr. SEYMOUR BARLING (Birmingham) said the training of a surgeon was hedged in by economic and other difficulties. Before the aspirant got on to the hospital staff was the time for him to supplement the teaching and training derived from his own hospital by that obtained at other schools. When he had got on the staff he had his duties and responsibilities and might realise too late the opportunities he had missed. The practice at Birmingham was this. When a vacancy on the staff was likely to arise, a fair time ahead a man was appointed to fill it; he was then sent on a year's study leave, during which the hospital maintained him from a special staff fund, exercising over him the minimum of control. Usually such a man travelled abroad, visiting famous schools. The plan was found to work well; it prevented in-breeding among the staff, and relieved the new member of any anxiety of his post being filled in his absence. In earlier days the young surgeon was not given beds, he did the emergency work; now a man was given beds as soon as he joined the staff, and the number of beds placed in his care was gradually increased. Surgery being essentially a handicraft, it must be trained for in early years. However undesirable from the teaching standpoint, it was inevitable for surgery to break up into compartments; but specialism should never be cultivated except on the basis of general surgery. The attributes of mind needed for a surgeon were so different from those for a successful physician that it might not be wise to allow every surgeon to spend part of his time as a physician; almost the same results were obtainable by coöperation among the hospital staff.

Mr. HERBERT PATERSON thought the surgeon should have a classical rather than a mathematical education. In London his training was not as good as in some other parts of the country. Six years spent in the dissecting-room was a waste of time; those years were more usefully spent in physiological and pathological work. He fully agreed as to the importance of carpentering or other handicraft. He thought every surgeon should hold an appointment as anæsthetist for 6 to 12 months; it taught him how much a patient could stand and the many ways of dealing with surgical conditions. He would define a surgeon as a complete physician who had learned to use his hands.

Mr. A. J. WALTON agreed with what had been said of the importance of a good preliminary education, especially history, and in particular the history of medicine. The sciences which were ancillary to medicine should be studied as a preliminary, and they should be returned to after qualifying. He would include comparative embryology. Diagnosis was essentially important, and the young surgeon needed to know when to operate. Intimate and complicated operations should be for post-graduates. Every opportunity should be given to a man to take his primary fellowship when he had graduated. In some the auditive memory was paramount; these became good musicians. Others had good visual memory, and these supplied the good surgeons, for having seen an organ or an operation they could, almost without effort, recall the picture accurately. He did not think a given student could be made alternatively a good physician or a good surgeon. No student should be allowed to start in hospital on a specialty.

Mr. ZACHARY COPE regretted that most hospitals had not a staff fund out of which to help young surgeons in the way Mr. Barling described.

The PRESIDENT said that he had been interested to notice the differing views of speakers about the value of anatomy in the post-graduate training of a surgeon. He himself, after a year as medical registrar, spent five years in the anatomical department. Though a certain amount of training in anatomy was advantageous, he considered that appointments which provided opportunities of acquiring experience in clinical and operative surgery, and in pathology, were of greater value at this stage of the surgeon's career. An important point in the training of the undergraduate in surgery was the effect of special departments. He had found that undergraduates knew very little of the diagnosis and treatment of cases usually seen in those departments. This was no reflection on the work done there; it simply meant that the work was really post-graduate and assumed a higher standard of knowledge than the undergraduate possessed. He thought that the remedy was that each special department should work in close coöperation with a general surgical unit, including combined rounds by the surgeons in charge, so that the application of general surgical principles to the diagnosis and treatment of the special cases should be always before the student. Mr. Turner concluded by recommending literature as a hobby for surgeons. This did not mean reading many books; comparatively few were really necessary, provided that they were the best. But the hobby would train the surgeon to express himself concisely and lucidly, and would be of help to him later in recording the fruits of his experience.

SECTION OF THERAPEUTICS AND PHARMACOLOGY

AT a meeting of this section held on March 12th the chair was taken by Prof. J. W. BURN, the president, and Dr. T. F. COTTON opened a discussion on the

Treatment of Angina Pectoris

The treatment of angina, he said, was based on a rational and orthodox conception of its pathology. Nowadays the cause of the pain was believed to be a disturbed coronary circulation and its consequences. The pain was produced by chemical stimuli acting on the heart muscle, the stimuli accumulating as the result of reduced blood-supply. T. Lewis's work on intermittent claudication had shown that the pain in the two conditions had essentially the same character. Pain was more easily provoked when the arteries were diseased. When the blood-supply to the cardiac muscle was seriously obstructed, pain was caused, and could be definitely linked with an inadequate supply of blood. The pain of angina might be independent of a rise in blood pressure; it might be associated with a rapid pulse-rate, and more easily provoked on a cold and windy day or during unusual effort. Pain after a heavy meal was not due to overloaded stomach but to an increase of blood flow to the abdominal vessels. The anæmic patient was a potential subject of angina. Anginal pain could be easily produced by exercise because the supply of oxygen was not sufficient to meet the demands of contracting heart muscle. The problem had been attacked by provoking and relieving pain in controlled conditions.

There were three types of angina, and treatment depended on their identification: coronary thrombosis, spasmodic angina, and effort angina. Some extra-cardiac factors also played a part; the circulatory events might be closely related to structural changes or functional disorders in other parts of the body. The similarity of the symptoms of gall-bladder disease and other disorders of the digestive tract with those of angina was one of the real difficulties in diagnosis. When the gall-bladder was the seat of disease and the pain resembled an anginal seizure, was it justifiable to assume that anginal pain must be related to coronary defect, or might it be gall-bladder pain throughout? He had records of 27 cases with anginal pain in gall-bladder disease. Ten had had operation, and nine of them had thereafter been free from chest pain. Two had been freer from pain on suitable diet. There had been enlargement of the heart in only three of fifteen cases examined radiologically. Gall-bladder disease and anginal pain were not necessarily separate phenomena: organic disease in other viscera might also provoke anginal pain. Such pain might be improved by treatment of functional disease or of conditions such as sprue. A chemical as well as a mechanical stimulus might disturb the heart and evoke angina. There was evidence that nervous impulses might affect the tone of the coronary vessels, but it was difficult to see how this could occur if the vessels were healthy. Probably the patients were potential anginal subjects with unrecognised coronary changes.

Thyroidectomy had yielded good results in angina. Intramuscular adrenaline would provoke a seizure in an anginal subject, but lost its action after the thyroid operation. The value of the operation could be attributed to the altered reaction of the cardio-vascular system to adrenaline. In thyrotoxicosis total thyroidectomy was advisable. In anæmia the cardiac musculature was virtually in a state of ischæmia, and anginal attacks were not rare, especially of the coronary arteries were diseased. In diabetes there might be nutritional changes linked with arterio-sclerosis and hypoglycæmia. The supply of glycogen to the heart muscle might well be inadequate, and insulin was a reasonable treatment for such patients.

Dr. CRIGHTON BRAMWELL pleaded for the abolition of the term "false angina," because the word "angina" conveyed to the lay mind the idea of sudden death. Pain which stimulated angina—excluding digestive causes—was not frequently due to anxiety neurosis or general nervous exhaustion. Neurotic pain failed to reproduce the typical picture, and the treatment was purely psychological. The second type had been termed "heartache," affected women more than men, was commoner in the first half of life, and manifested a multiplicity of symptoms. The pain was submammary and persisted after exertion, rather than appearing only on exertion. The treatment included rest and sedatives, but the patients tended to relapse.

Angina itself was now generally ascribed to myocardial ischæmia. The distinction between cardiac infarction and the angina of effort was being carried too far, as the two might overlap. Rapid deterioration in exercise tolerance indicated progressive narrowing of the coronary arteries. In severe cases of acute coronary thrombosis, morphia must be used freely and the patient must be guarded against dangerous complications. Sudden death was probably due to fibrillation of the ventricles. There was usually considerable shock from rapid fall of blood pressure, and this must be treated. After the shock there was still risk of heart rupture during the first three weeks; the patient must therefore be kept absolutely at rest. Many developed congestive heart failure, and all were liable to a further attack. In angina of effort the patient could carry on if he went slow. It was important to distinguish between the factors producing the ischæmia and the factors tending to aggravate it. Of the second group, one of the most important was the nervous factor. People varied in their sensitivity to pain. The "detonating mechanism" lay dangerously near the surface in the excitable, sensitive subject. Anxiety was always a problem, and called for very careful and sympathetic treatment. Cerebral depressants were the only drugs diminishing the frequency of attacks. Toxic conditions, such as excessive smoking and food sepsis, aggravated the condition. Obesity was important; it produced angina, and the reduced exercise increased the obesity. The vicious cycle had to be broken. Graduated exercise was an important item in treatment Great benefit was often derived from complete rest, but in less severe cases an occasional day in bed was enough. The patient should be warned to avoid exertion known to bring on attacks, to set his own pace, and to adapt his life to his damaged heart. High blood pressure was another aggravating factor. To remove the pain without removing its cause was to remove a valuable warning signal.

ANGINA OF EFFORT

Dr. CLIFFORD HOYLE spoke of a review of drug treatment made recently in the London Hospital to determine the comparative value of drugs used in the continuous and immediate treatment and the prevention of attacks. Ninety patients had been studied in the "continuous" series, all having negative Wassermann reactions. It was important to define the type of case under study. As a control, one of two placebos had been prescribed at intervals. Fifteen effective drugs had been tested. Disregard

of the natural variations and remissions accounted for the reputation of many drugs. Out of 66 patients in this series 25 had been improved. None of the drugs seemed to give a better result than any other, and the results from the placebos were better than those from nine of the "effective" preparations. The placebo had always been given first, and was given more often than any individual drug; mental bias in its favour and the chances of its coincidence with natural improvement accounted for its statistical success. The "continuous" part of the investigation therefore gave purely negative results. For the prevention and treatment of attacks the series had been increased to 122, including 25 syphilitics. The effectiveness of glyceryl trinitrate was materially affected by its keeping properties and its absorption. After storage the tablets deteriorated seriously. Absorption was very different from the buccal mucosa and the stomach; the drug should always be chewed thoroughly. Vasodilators, especially nitrites, were the best means of relieving individual attacks. On all counts, glyceryl trinitrate in tablet form, absorbed from the mouth, was far and away the best, having only failed to relieve attacks in 4 cases out of 122. Amyl nitrite had only given great relief in 27 out of 63 cases. The tablets were convenient, easy to take, cheap, and rarely produced unpleasant symptoms. Moreover, they nearly always prevented attacks if taken before exertion; only 2 out of 72 patients had experienced no prophylactic benefit. Amyl nitrite had scarcely any preventive value, and other drugs were all inferior in this respect to glyceryl trinitrate. There seemed to be no danger in its use over prolonged periods.

DISCUSSION

Dr. E. STOLKIND said he had collected 80 or 90 cases from the literature and had found that coronary thrombosis was by no means always associated with angina pectoris. He did not agree that focal sepsis had anything to do with angina; cardiologists were too apt to order dental extractions, which left the patient worse rather than better.

Dr. R. TRAVERS SMITH welcomed the stress laid by Dr. Crighton Bramwell on anxiety. Patients were often found to have lived their lives in a state of anxiety and emotional over-exertion. Emotional wear and tear had a great deal to do with essential hypertension, thickening of the arteries, and coronary disease. Those liable to effort angina often got into a state of anxiety when attempting an effort, and in consequence held their breath. It was useful to give them the tip to breathe freely before and during the exertion. A few big breaths in an attack often gave some relief.

Dr. J. W. TREVAN asked why trinitrate produced its effects.

Dr. JOHN PARKINSON inquired the best treatment for nocturnal attacks. He doubted whether toxins were sufficient in themselves to produce a disease which shortened life. The average patient with angina pectoris was not a nervous or neurotic patient. It was important to learn whether the prevention of anginal attacks was dangerous or not.

REPLIES

Dr. HOYLE thought that trinitrate acted as a coronary dilator. Apart from a full dose of opium, chloral was probably the best preventive of nocturnal attacks. Chloral was generally used too charily; two drachms was a minimum dose.

Dr. BRAMWELL said he did not regard focal sepsis as causative, but only as an aggravating factor.

Dr. COTTON said that great improvement in a certain thyrotoxic type of anginal case might be effected by removal of septic tonsils affected presumably through the thyroid gland. Removal of the thyroid might not cure the condition, but it made the patients much more comfortable. There was a peculiar anxiety associated with angina, though the patients were not neurotic.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution held on Feb. 28th, with Dr. C. O. STALLYBRASS, the president, in the chair, a paper on

Gas-air Analgesia as an Aid to Anæsthesia in Children

was read by Dr. R. J. MINNITT. He began by speaking of the anguish that may be inflicted in giving an anæsthetic to a child, and urged that the mask should never be placed on the face during induction. His own technique depended on the fact that nitrous oxide is heavier than air and therefore tends to sink. He used a mask at the upper end of which were three painted discs representing traffic lights. This was held 4–6 in. in front of the face and the child was instructed to watch the red disc and say when it changed colour. Gas was allowed to flow from the delivery tube into the mask so slowly that the current was not appreciable, and in a very short time the child was quietly asleep. The mask was then gradually lowered, and gas-and-oxygen or other anæsthetic was used. The apparatus employed was the McKesson or the Boyle.

Mr. W. A. THOMPSON said that those who operated frequently were fully alive to the importance of the occasion to the patient. Some children were terrified if their faces were covered up; some, even in the course of play, were extremely upset if their limbs were securely tied or if they were prevented from moving. Due regard should be paid to these known reactions, and the barbarous method of asphyxiation, strong arms, leather straps, and other time-honoured aids to induction should have gone for ever. The unstable nervous system of the child was no suitable field for the exercise of these crude arts, and all intelligent, considerate, and simple aids to anæsthesia in children should be welcomed with gratitude.

Mr. PHILIP HAWE said he had been impressed by the ease and certainty of Dr. Minnitt's method, and especially by its tremendous advantages from the psychological standpoint. He thought it was a great advance on those more commonly employed.

Lead Treatment of Cancer

Mr. M. M. DATNOW, in a paper entitled Some Observations on the Lead Treatment of Malignant Disease, recalled that research on the lead chemotherapy of cancer had been started in 1921 by Blair-Bell, who founded the Liverpool Medical Research Organisation. This body was still actively engaged in research and in the treatment of patients. Some 180 lead preparations had been made in the organic chemistry department of the Liverpool University under the direction of Prof. Heilbron, and now Prof. Robertson was continuing the attempt to produce lead compounds with a high therapeutic index. Lead in an ionic form was too toxic for general application, but the lead complexes employed in Liverpool were quite safe and produced no untoward results if controlled efficiently. Reactions were now

seldom seen. There had been a tendency to diminish the dose of lead administered and to keep the patient under treatment for a long time. Mr. Datnow concluded by saying that there was a place for lead in cancer therapy, and that it should be given an earlier chance of benefiting the patient.

Prof. W. BLAIR-BELL spoke of the mistaken impression that the work in Liverpool had been abandoned. This was quite untrue; it had never ceased, and the original organisation (L.M.R.O.), though on a smaller scale, was still in active existence. It had been thought wise, however, to make no further publications until the extraordinary and unfortunate opposition to lead treatment had had time to die away, and until the obvious limitations of radium had been realised by the profession. Prof. Blair-Bell described as unscientific the attitude of mind which envisaged the possibility of human cancer, except in the earlier stages, being generally curable by local treatment alone. He believed that cancer started as a purely local lesion, which might be successfully treated, if discovered soon, by surgery and radiations, including heat, always presuming that it was accessible to such treatment. Inaccessible lesions and those that had become disseminated could not be so treated, and these types appeared to be far commoner than the others in clinical practice—owing to the absence of symptoms in the beginning of the disease, for which the public could not be held responsible. When the significance of this state of affairs was appreciated the case for some kind of generalised treatment would be recognised as overwhelming. The sooner the better, for although admittedly surgery and radium—one or both, or both together—were sometimes curative in respect of localised and accessible lesions of no great degree of malignancy, the risk of fatal results, of spreading the disease, and of mutilation was too great to be regarded complacently. Meanwhile considerable progress in lead therapy had been made. Whereas formerly patients often suffered, sometimes seriously, from the treatment, now no patient need be seriously disturbed, in spite of the fact, on which he had always insisted, that the patient must be fully under the influence of lead. A note published in the *Proceedings* of the Staff Meetings of the Mayo Clinic dated Jan. 30th, 1935, showed that investigators there were working on similar lines of thought and that much substantiation of the Liverpool work had been obtained. He looked forward to the account of this investigation that would shortly appear.

In conclusion, Prof. Blair-Bell said that the views he had originally expressed about the specific nature of malignant neoplasia produced by many causal factors had never been seriously disputed. The treatment based thereon had already led to the prevention of recurrence after incomplete operations, to the relief—and this was important and often overlooked—and prolongation of life of many sufferers from otherwise untreatable cancer, and to the clinical cure of a definite proportion of apparently hopeless cases. Finally, and perhaps of most moment to general practitioners, no patient in expert hands need now suffer at all as the result of the treatment.

Prof. W. J. DILLING said that the recent successful results with lead therapy of inoperable cancer had come under his observation. The organic lead preparations rarely caused any discomfort, even by focal reaction, and there was ample evidence not only of retardation and arrest of expected extension and metastases—in many more cases than could be claimed as spontaneous arrests—but also of instances where the growth had retrogressed. The injections produced remarkable improvement in the blood condition and weight, as well as the general health of patients, and often afforded relief from pain. They had so prolonged and rendered comfortable the lives of many patients that treatment with pharmacologically tested lead compounds must be regarded as of definite therapeutic value in carcinoma.

Dr. E. CRONIN LOWE said he hoped that the systematic cytological and serological control of treatment would prove a useful guide to the choice of remedies in particular cases. He had employed the Bendien reaction during the past three years, and had found no recurrence or metastasis in cases where the reactions remained negative or normal. Alterations to the positive seemed to give opportunity for the reintroduction of treatment, or a change to alternative treatment, before further growth was clinically discoverable.

ROYAL ACADEMY OF MEDICINE IN IRELAND

A MEETING of the section of medicine was held on March 1st, with Dr. V. M. SYNGE, the president, in the chair.

Tay-Sachs Disease

Dr. R. E. STEEN read a paper on Tay-Sachs disease (amaurotic family idiocy). He began by briefly reviewing its principal characteristics, alluding to its history, the three types described, and its racial, familial, hereditary, and age incidences. A prominent feature of its pathology was the remarkable lipoid infiltration of the cells of the nervous system, the eye suffering as part of this system, and presenting optic atrophy together with the pathognomonic "cherry-red" spot seen in the region of the macula lutea. He also referred to the new work connecting the lipoid infiltration found in Tay-Sachs disease with the similar lipoid infiltration found in Gaucher's disease and Niemann-Pick disease; Tay-Sachs disease was present in 5 out of 15 cases of Niemann-Pick disease described by Bloom in 1928. Among the many characteristic symptoms, Dr. Steen laid stress on hyperacusis, which was not referred to in most text-books, but which had been described and was a striking feature in a case lately under his care. The special points of interest in this case were: (1) the late onset of the disease, the child presenting no symptoms until it was nine months old; (2) the fine development previous to this, so that its "peak" weight, at just under one year old following a steady rise, was 31 lb. 14 oz.; (3) the absence of any Jewish blood in the parents; (4) the fact that only one other member of the 11 children in the family suffered from what was almost certainly the same disease. In conclusion, Dr. Steen said he thought modern work might hold some hope for the future treatment of these peculiar lipoid diseases, and suggested that the biochemistry of the blood might repay study; in Niemann-Pick disease a cholesterolæmia seemed to be often encountered. It was possibly significant that children with Tay-Sachs disease had nearly always been remarkably well nourished before the onset.

Dr. E. HARVEY said that the condition resembled vitamin-A deficiency, and had been treated in America on these lines.

Dr. ALAN THOMPSON read notes on a case of Addison's disease, in a girl aged 11½, in which the suprarenal glands were found to be completely destroyed by tuberculosis.

REVIEWS AND NOTICES OF BOOKS

Medical and Orthopedic Management of Chronic Arthritis

By RALPH PEMBERTON, M.S., M.D., F.A.C.P., and ROBERT B. OSGOOD, A.B., M.D., F.A.C.S. London: Henry Kimpton. 1934. Pp. 403. 21*s*.

PROBABLY more nonsense has been written and more loose statements have been made about the arthritides than about any other group of pathological conditions, with the exception perhaps of diseases of the mind. Dr. Pemberton has contributed as much as anyone towards removing the confusion surrounding this group of diseases and putting them on a sounder and more scientific basis. The reader of this, his latest contribution to the subject, should not be discouraged by the conventional opening chapters on history, incidence, classification, and pathology, but should battle through or skip them, according to his state of repletion with these aspects of the problem, until he reaches the chapter on physiological disturbance which is worth close study. It provides a sound working basis for treatment and once again discredits several deeply rooted but quite inaccurate beliefs—for example, the tradition that rheumatism is dependent on an "acid" condition of the blood and tissues; that there is no evidence of anything remotely resembling a systemic acidosis in the rheumatoid syndrome is now generally accepted. A determined attempt is also made to dispel the confusion of thought surrounding arthritis, gout, and the uric acid content of the blood. An interesting section is the one on the capillary blood flow. It seems now to be established that whereas in the normal person a drop of blood first issuing from a stab of the finger contains a higher red cell count than does that of the later issuing free flowing blood, the opposite state of affairs is shown by the majority of arthritics, who seem to be more or less "desiccated" in that the superficial tissue at the periphery contains relatively little blood. The theory that substances may reach the joint cavity from the gastro-intestinal tract is elaborated fully, and important conclusions are reached. The authors believe that fuller knowledge of the dysfunctions of the gastro-intestinal tract and of the means necessary to correct them have been among the most significant recent advances in our conception of the arthritic problem.

More than half the book is devoted to treatment: general medical treatment, gastro-intestinal tract and diet, physical treatment, vaccines, drugs, and, finally, orthopædic and surgical treatment. The most interesting section is that on the gastro-intestinal tract and dietetics; therapy is suggested for correcting dysfunction, and the results of treatment are illustrated by X ray examination before and after. The section on orthopædics is fully illustrated, as also is that on surgery.

This book may be commended with confidence to all interested in the rational treatment of the arthritides.

Surgical Errors and Safeguards

Second edition. By MAX THOREK, M.D., Professor of Clinical Surgery, Cook County Graduate School of Medicine, Chicago. London: J. B. Lippincott Company. 1934. Pp. 696. 45*s*.

IN a foreword to this volume Dr. Arthur Dean Bevan draws attention to the performance of unnecessary operations and to the errors made by those who are relatively incompetent as serious problems of modern surgery, and he suggests that the book may be of value as a guide to advanced medical students and "progressive surgeons" to enable them to avoid the pitfalls. That a second edition has been called for only two years after the first must be regarded as evidence that it has been useful, more particularly perhaps as a warning to the advanced student who may be tempted to undertake surgery for which he has not been properly trained. It must be very difficult, however, to write a book about errors, for the important mistakes in surgery are usually due to errors of judgment and not to ignorance of anatomy or technique, and one has to make one's own errors in order to gain experience. It thus comes about that what may be to one person a trap to deceive even the most elect, may be regarded by another as a blunder which may be avoided by the exercise of ordinary care and skill.

Apart, however, from matters of personal experience and opinion this work is unsuitable as a text-book for students, and we are very doubtful whether a surgeon who has undergone an adequate training could be pardoned for falling into any but a very few of the errors it mentions, or could obtain any substantial help from a perusal of the methods suggested as safeguards. Often when a real difficulty in diagnosis or treatment is mentioned we are not told by the author how the difficulty is to be overcome, and it is impossible to tell which he considers to be matters of greater or less importance, since heavy type is fairly evenly distributed throughout every page. The book is an extraordinary mixture of trivialities and essentials, of platitudes and wisdom, set out with so little discrimination that the good points lose their value. On several occasions the reader is rightly advised not to do certain things, but the reason given for not doing them is not the correct one, and the book contains errors of anatomical and pathological fact quite apart from expressions of opinion which are open to doubt. Its worst fault, however, is its disorderly arrangement, differential diagnosis being mixed up with treatment, and random remarks about irrelevant subjects being interpolated haphazard in the text. It is for this reason especially that the book cannot be recommended to students, but that is not to say that surgeons will not find it interesting and in parts stimulating.

A Practical Manual of Diseases of the Chest

By MAURICE DAVIDSON, M.D., F.R.C.P. Lond., Physician to the Brompton Hospital for Diseases of the Chest, and to the Miller, General Hospital. London: Humphrey Milford, Oxford University Press. 1935. Pp. 528. 42*s*.

CHEST surgery and radiology have forged ahead recently and their advance has brought with it important changes in theory and practice. Dr. Davidson's book, without being an exhaustive treatise, succeeds in supplying the advanced student or practitioner with what he requires—that is, a thoroughly up-to-date text-book of chest diseases, expounding modern methods of treatment and the type of case to which they are applicable, without details of the technique of highly specialised operations. Case-histories are freely used and add to the practical value of the work.

The opening chapters deal clearly and succinctly with the anatomy, physiology, and radiology of the normal chest and with methods of examination.

They are followed by a brief chapter on diseases of the upper respiratory tract, which might have been omitted with advantage, since anyone requiring information on this subject is unlikely to seek it in a manual entitled diseases of the chest. The following sections on diseases of the bronchial tubes and asthma contain a really good description of the pathology and treatment of bronchiectasis. The selection and the reproduction of the radiograms illustrating these sections deserve high praise. Of the chapters on diseases of the lungs the earlier ones include adequate accounts of recent work on silicosis, asbestosis, and other industrial respiratory diseases. The most important section naturally deals with pulmonary tuberculosis; the summary of the pathology of this disease is unfortunately less up to date than the rest of the book, the work of Ranke, Redeker, and Assmann receiving little attention in the text, although the infiltrations described by the last-named observer find a place in the case notes. Discussing sanatorium treatment, Dr. Davidson makes a statement which must not go unchallenged: "The system of graduated exercise originally started by Dr. Marcus Paterson, and now adopted in most sanatoria, is based upon the principle of auto-inoculation in small doses in order gradually to raise the patient's immunity." Surely the Paterson theory is not adopted by the majority of our sanatorium superintendents. Presumably Dr. Davidson has confused graduated exercise, used by Walther long before Paterson's time, with graduated labour, deliberately producing reactions, introduced by the latter.

The chapters on intrathoracic suppuration, which are among the best in the book, give a clear survey of recent work in the diagnosis and treatment of empyema, pulmonary abscess, and gangrene. In the concluding chapters Dr. Davidson is again at his best in dealing with the difficult problems presented by new growths of the lung, a subject with which his name is already associated.

Strabismus

Its Re-education: Physiology and Pathology of Binocular Vision. By A. CANTONNET, Ophthalmologist of the Laennec Hospital; and J. FILLIOZAT, Assistant to the Hospital and to the Albert Remy School of Re-education. With the collaboration of G. FOMBEURE, Assistant to the Albert Remy School of Re-education. Translated from the French by the late Dr. MAX COQUE, B.Sc. London: M. Wiseman and Co., Ltd. 1934. Pp. 379. 21*s*.

ANYONE concerned with the orthoptic treatment of squint will find much of interest scattered through this book. After expounding at considerable length the physiology of normal binocular vision the authors deal with abnormal conditions. Binocular instability is defined as "uncertainty in the collaboration of the vision of the two eyes." It differs from squint and from heterophoria. The patient complains of his inability to fix, and the symptoms resemble those of an error of refraction although none may be present. To diagnose the condition Cantonnet uses the diploscope of Rémy or a binocular test of his own. If the instability is lasting the symptoms may be very distressing, and though an error of refraction may be partly responsible there are cases in which no glasses are of avail. Some of these patients have come to persuade themselves that they suffer from a serious disease of the eyes, and the only remedy, according to the authors, is systematic training in the function of binocular vision. The second abnormal condition is heterophoria, in which the difficulty of exactly focusing the two eyes on the same point is so constant that it is capable of being overcome by prisms. The third is true strabismus, in which there can be no binocular vision, the vision of one eye being suppressed or, as this book terms it, "neutralised." It is this neutralisation that is the essential character of true strabismus and the first great difficulty in its cure. Neutralisation is not the same as amblyopia, for it is compatible with good visual acuity; but if long continued it may cause amblyopia from disuse. This necessitates the well-known measures usually adopted to prevent it.

Cantonnet is a steadfast believer in the orthoptic treatment of squint as opposed to operation, and makes great use of the diploscope of Rémy together with various other devices. In this book the arguments in support of these views are clearly set out.

Modern Methods in Hospital Treatment: Westminster Hospital Reports

Edited by STANFORD CADE and R. J. V. PULVERTAFT. Vol. XXII., 1929–1933. London: H. K. Lewis and Co., Ltd. 1934. Pp. 428. 7*s*. 6*d*.

IT is customary at several teaching hospitals to include in periodical reports original articles or reprints of articles which have already been published by members of the staff. This practice has long been traditional at Westminster Hospital, and it has served the purpose of rendering generally accessible observations too often confined to domestic records. This volume, which covers a period of four years, is peculiar in that a deliberate attempt is made to indicate the methods of the staff of the institution in dealing with the type of case remitted to them by the general practitioner. Some of the articles here presented almost achieve the distinction of monographs—notably, that by Mr. Arthur Evans, which is written in an intimate and refreshing style. He has dealt with disease of the gall-bladder, and stresses the importance of cholecystitis apart from stone. Biliary colic is "only an incident in the career of a gall-stone"; it may occur in the absence of any stones. The important task of the surgeon is to diagnose the pathological gall-bladder before the colic is manifested; Mr. Evans follows the teaching of A. L. Wilkie in so far as it suggests that the stone follows the inflammation. As regards treatment, he advocates cholecystectomy for both stone and inflammation.

Mr. Cade analyses the practice of radium therapy in cancer of the breast and mouth. In 200 cases of carcinoma of breast from 1926 to 1932, 62 were deemed operable and 138 inoperable; 105 are still alive. But, he adds, "no known method of treatment prevents visceral or skeletal metastasis, and the problem remains unsolved." Cancer of the mouth and pharynx is discussed in a section closely following Mr. Cade's Hunterian lecture, published in THE LANCET, 1933, ii., 4. The total survival-rates for the tongue are given as 33⅓ per cent. in a series of 225 cases from 1925–32. In carcinoma of the pyriform fossa radium is said to offer the only chance of cure; and taking this question as a whole, radiation is claimed to have reached equality of status with surgical excision, even in operable cases. Ulcer and carcinoma of the stomach are discussed by Dr. Adolphe Abrahams; the article includes an analysis of the neurogenic theory in the ætiology

of gastric ulcers, and a statement of the writer's belief that the merit of certain elaborate therapeutic measures lies in the enforced confinement to bed and mental tranquillity; dietetic details, he considers, have gained an exaggerated importance. Intragastric photography is believed as yet to be in an embryonic stage, though perhaps capable of important development.

Mr. E. P. Brockman has selected manipulative surgery as his subject for discussion, and emphasises the often deleterious effect of rest on an injured joint or muscle. The various joints are separately discussed; and the contra-indications for manipulation are particularly brought out, as in Codman's bursitis, and certain injuries of the wrist-joint. The treatment of acute and chronic pain in the back by manipulative methods is said to give very satisfactory results. Articles of more specialised interest are written by Mr. Gilbert Chubb on indications for the cortical mastoid operation, by Dr. H. A. Dunlop on hydrocephalus, and by Mr. E. Rock Carling on median chordotomy, arterial embolectomy, and arteriovenous aneurysm. The secretary of the hospital, Mr. Charles M. Power, has contributed an essay on some aspects of hospital management, in which many shrewd criticisms as well as some helpful suggestions are made: the wisdom of informing relations candidly of a patient's condition; whether the newly qualified man should start work in the casualty department; the average proper stay of a patient in hospital and the reason why he often stays longer, are topics on which the views of a layman experienced in hospital administration make interesting and suggestive reading.

The volume concludes with the report proper, including abstracts of post-mortem examinations. Specimens added to the museum include four cases of multiple myelomatosis, and two of sarcoma complicating Paget's disease of bone, a radium burn of aorta, an Œdipus monster, and mycosis fungoides of breast. The laboratory examinations in 1932 numbered 13,839; sooner or later the problem of the increasing call of a teaching hospital on the hospital laboratory will have to be faced. Maternal deaths due to childbirth, three of which were undelivered, numbered 11 out of 1381 cases; the causes did not include sepsis.

Gynecology

Fifth edition. By BROOKE M. ANSPACH, M.D., Professor of Gynecology, Jefferson Medical College; with the assistance of PHILIP F. WILLIAMS, M.D., Assistant Professor of Obstetrics, School of Medicine, University of Pennsylvania; and LEWIS C. SCHEFFEY, M.D., Assistant Professor of Gynecology, Jefferson Medical College. London: J. B. Lippincott Company. 1935. Pp. 832. 42*s*.

THE general scheme of this standard American textbook is orthodox. The opening chapters on anatomy and embryology are clear and full. It is assumed throughout that the gynæcologist is familiar with the cystoscope and proctoscope, and that no pelvic examination is complete without a full investigation of the bladder and rectum. In the treatment of chronic infection of the cervical canal reliance is placed upon the use of the cautery, of a "cone excision," or if a laceration exists, trachelorraphy is unhesitatingly advised. Whereas the dysmenorrhœa is held to be associated with anteflexion of the cervix, retroflexion, especially the congenital variety, is regarded as often giving rise to no symptom. More attention is directed to the various misplacements and kinks of the uterus than has been the custom in the English text-books of recent years. Supravaginal hysterectomy is recommended as the operation of choice upon the grounds that complete hysterectomy is a more dangerous and difficult operation, and that "routine removal of the entire uterus is unnecessary." This advice would not be acceptable to most British teachers. For cancer of the body of the uterus, which is said to have "a death-rate almost as large as cancer of the cervix," radiation of the body of the uterus followed by hysterectomy 8–10 weeks later is the method of treatment advocated. We are glad to note that the operative treatment recommended for diseases of the Fallopian tubes and ovaries is conservative.

The volume contains chapters dealing with diseases of the bladder, kidney, and ureter, appendicitis, visceroptosis, diseases of the anus and rectum, and backache. Nowhere is there to be found guidance upon the consideration of symptoms as such, nor upon that difficult problem—the assessment of the mental or physical basis of alleged disease of the pelvic organs. The book conveys the impression, hardly acceptable, that pelvic complaints nowadays signify pelvic disease, and that such trouble can for the most part be remedied by operative means.

On the whole, author and publisher deserve cordial thanks for this book. The illustrations are unusually good and an extensive bibliography follows each chapter.

Biomathematics

Being the Principles of Mathematics for Students of Biological Science. Second edition, reset and enlarged. By W. M. FELDMAN, M.D., B.S., M.R.C.P. Lond., F.R.A.S., F.R.S. Ed., Senior Physician, St. Mary's Hospital, Plaistow. London: Charles Griffin and Co. 1935. Pp. 480. 25*s*.

IN the scientific productions of to-day the seeker after truth is more and more faced with the language of the mathematician or the methods of analysis of the mathematical statistician. Some knowledge of at least the elements of that language and of those methods has become for most workers essential. In our review of the first edition of Dr. Feldman's book, which was published in 1923, we suggested that anyone who studied with care his exposition, and the examples with which it was interestingly illustrated, would be able to grasp the meaning of at least nine-tenths of the medico-mathematical papers published, as well as being assisted in his own line of research. To the present edition two new chapters have been added, on nomography and estimation of errors of observation, while the chapter on biometry has been rewritten and enlarged. In the latter we note that Dr. Feldman continues to give Blakeman's criterion as a test of the linearity of regression, though statisticians are uniformly agreed that it is fallacious, and exact tests have been devised and published by R. A. Fisher. No discussion of the methods applicable to small samples is given. Such methods are constantly needed by the laboratory worker, and a reference to them, or at least a warning against the application to small numbers of some of the methods set out, would have been helpful. Students of biometry are, however, well catered for elsewhere, and it is for Dr. Feldman's discussion and illustration of the application of mathematics to medical and other scientific problems that the student will be grateful.

THE LANCET

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THE NEED FOR MEDICAL PSYCHOLOGISTS

A LETTER in our issue of Feb. 23rd (p. 462) called attention to the need for medical psychologists in the north of England. Our correspondent is a clergyman whose knowledge comes from his own pastoral work, and though the difficulty of obtaining treatment for sufferers from the psychoneuroses is no new discovery, yet such an expression of opinion is a serious challenge to our profession. It is strengthened by the warning that the important work of healing the mind diseased is being attempted by self-styled psychological practitioners without the necessary training in general and psychological medicine. The warning, indeed, does not apply to the north alone. There is in London at least one lay organisation offering treatment for the psychoneuroses and, apparently in good faith, inviting medical men to send patients to its clinic. The successes of faith-healers and irregular practitioners in general are often rightly attributed to the "neurotic" nature of the conditions that may have been alleviated, but this observation ought not to be, as it often is, accepted as exonerating us from responsibility. The public are coming to recognise that the psychoneuroses cause serious suffering and disability, and we must either set our house in order and make their systematic study and treatment a part of regular medicine or resign ourselves to leaving them to the unqualified practitioner.

The student at a teaching hospital is fortunate if he hears a few lectures on medical psychology; of systematic clinical instruction he receives nothing, and in his qualifying examination a question on the psychoneuroses would be as unwelcome as startling. After qualification there are no hospital posts in which he can acquire experience of these disorders, and if he is original enough to desire to specialise in them he must give up any prospect he may have of joining the hospital staff and seek work and experience elsewhere. Here his choice will be narrow. The Institute of Psycho-analysis offers training in that particular method, and the Institute of Medical Psychology gives a more general course; in neither of these establishments will he find a lack of clinical material, for their waiting-lists are so extensive that they are periodically closed. The diploma in psychological medicine was designed primarily for those proceeding to asylum work and, except for diagnostic purposes, a training in psychiatry or organic neurology is of little value in the handling of the psychoneuroses. For many cases, indeed, a knowledge of cardiology, of abdominal diagnosis, even of gynæcology, is more necessary.

It is sometimes made a reproach to psychotherapy that not enough men of high promise enter the specialty, and it is true that only exceptional circumstances or strong personal inclination can, under present conditions, tempt into it those who have a prospect of professional advancement along more orthodox paths. The work is difficult and so time-consuming that only rarely can it be as remunerative as other specialist work. The pioneer in a provincial city would find it necessary to educate his colleagues in the elements of diagnosis and the recognition of cases suitable for treatment, for in no clinical matters can intuition take the place of systematised knowledge. Young men with training in psychotherapy shrink from the prospect of combining this pioneer work with the stern necessity of earning a livelihood, and in this connexion it is significant that it has fallen to the lot of a clergyman and not a medical man to draw attention to the difficulty of obtaining treatment in the provinces. The public demand for treatment of the many conditions calling for psychotherapy will not be satisfactorily met until the specialty is granted recognition and there is offered to keen men of normal ambition the prospect of professional advancement commensurate with that to be gained by ability and hard work in other branches of clinical medicine. The creation of new specialties by separation of them from the general body of medicine is often deprecated and may have been carried too far; in psychotherapy we have a specialty that has made vigorous growth in the face of opposition and neglect, and now demands not separation but union.

SURGICAL TREATMENT OF LYMPHŒDEMA

AT a meeting of the section of tropical diseases and parasitology of the Royal Society of Medicine on March 7th, Mr. A. H. MCINDOE reviewed recent attempts to relieve lymphatic stasis in elephantiasis and other forms of lymphatic obstruction. Experiments in lower animals have so far done little to solve the question of the character of the obstruction required to produce chronic lymphœdema, but they have demonstrated the enormous power which the lymphatic system possesses for regenerating itself and for re-establishing a collateral circulation; operations which in man produce chronic lymphœdema are in fact without effect upon animals. REICHERT, however, claims to have produced elephantiasis in the dog by continually blocking the lymphatics with Indian ink directly new anastomoses appeared. In man it has so far been possible to demonstrate an obstructive lesion in only a proportion of cases of lymphœdema; the block may be inflammatory and due to streptococci or filariasis, it may be non-inflammatory and due to occlusion by malignant growths, surgical removal of lymph nodes, or extrinsic pressure. In congenital lymphœdema of the legs the obstruction is probably located in the pelvic lymphatics, as MANSON-BAHR and O'CONNOR have shown in the case of filariasis. In order to produce chronic œdema, the lesion

must be gross, it must be centrally situated, and have persisted for years.

It may be asked why in man the body cannot develop an efficient collateral circulation so as to carry off the static lymph; the answer to this is that in certain situations of the body the normal anastomoses are so poor as to prove totally inadequate when put to the test. As long ago as 1908 SAMPSON HANDLEY realised the importance of re-establishing the flow of lymph and endeavoured to do so by an operation which he described as lymphangioplasty. Strands of stout silk thread were buried in the swollen subcutaneous tissues by an operation analogous, as Mr. HANDLEY put it, to the drainage of a marshy field by lines of buried pipes. KONDOLEON went further and removed from the leg strips of œdematous skin and deep fascia 2 inches wide, both medially and laterally. Dr. A. L. GREGG showed slides of remarkable results obtained in this way. But it cannot be said that either of these operations or their subsequent modifications have been successful in re-establishing a permanent lymph flow. That has now been done by Sir HAROLD GILLIES and Prof. F. R. FRASER in a case recently reported,[1] where lymphatic block in the inguinal region was overcome by means of a short-circuiting bridge of transplanted tissue. This operation depended for its success upon the verification of a series of assumptions which may be thus briefly set out: (1) that the lymph stasis was actually due to a central block; (2) that a reversed flow of lymph could be produced by grafting a bridge of skin containing properly directed collecting lymphatics across the anastomotic line to the nearest set of intact lymph glands; (3) that regeneration of lymphatics would occur between the graft and its bed so as to act as a "lymphatic tap." The patient was a young woman of 28 who had suffered for four years from lymphœdema præcox, her disablement being of such an extent as to lead her to ask for amputation of both legs. KONDOLEON'S and other forms of operation had been performed without success. The first operation consisted of anastomosing a strip of forearm 7 inches long to the upper and outer part of the thigh on the same side. Three weeks after the arm was joined to the thigh the œdema on that side definitely subsided. Having thus proved that two superficial lymphatic systems could be joined, GILLIES decided to take a strip of arm skin of sufficient length to reach from the thigh to the axillary system; this was done in three further stages, the arm being covered with a corresponding flap removed from the thigh. The operation was completed in September, 1934, and since then there has been no recurrence of œdema in the left leg, although the right remained as œdematous as ever. In a further case of Mr. MCINDOE'S at the Hospital for Tropical Diseases the arm skin was permanently transferred at the first operation. That the procedure has been successful is evident, and reflects great credit on all who took part in it, but, as Mr. MCINDOE remarked at the discussion, it is too early to assess its value generally for the relief of lymphœdema. It is a formidable operation, likely enough to be modified in the light of further experience.

[1] Brit. Med. Jour., Jan. 19th, 1935, p. 96.

CRIME AND INSANITY

FROM time to time the English bench finds it desirable to reassert the legal view of insanity and criminal responsibility. Such an occasion occurred last week at Lewes assizes upon the trial of Percy Charles Anderson, a motor mechanic aged 21, for the murder of his sweetheart, Edith Drew-Bear. Her body, with three bullets in it and Anderson's scarf tied tightly round the neck, was found in a water tank on the East Brighton golf course. Anderson had been walking with her at that spot; the bullets were apparently fired from his revolver; the revolver has disappeared, but in his pocket, when he was arrested, was found a bottle of irritant poison. Anderson in the witness-box said he had no recollection at all of what happened after the girl made some remark to him about another girl. He then seemed to get a pain in his head and a blankness came over him; the next thing he remembered was that he found himself in the sea. The jury, in finding him guilty of murder, came to the only conclusion (according to Lord HEWART, who tried the case) which it was possible for a conscientious jury to entertain. The defence had contended that Anderson suffered from masked epilepsy at the time of the crime. Though two prison doctors stated that they found no evidence of insanity in him, Dr. E. W. LINDECK, of Brighton, was called by the defence to describe the epileptic condition which might produce a complete "black-out" of the memory; and there was produced for the inspection of the jury the death certificate of an aunt of Anderson who died of an epileptic fit at the age of seven.

In his summing-up to the jury Lord HEWART gave a vigorous exposition of the legal aspect of criminal responsibility as based on the rules in McNaghten's case. The gist of the matter was, he said, that every man is presumed to be sane and to possess a sufficient degree of reason to be responsible for his crimes until the contrary is proved to the satisfaction of the jury. The Lord Chief Justice set out in detail the points which the defence must prove before the burden of establishing insanity is discharged. He had no difficulty in showing the jury that the defence had entirely failed to discharge this burden of proof; he was also able to tell them with much force that, on the assumption of a blank interval, Anderson's subsequent conduct was scarcely consistent with that of an innocent man. These issues, of course, are now settled by the verdict of the jury, subject to a possible appeal. Lord HEWART, however, went a little wider in remarking that insanity was "a question about which more than one profession is cultivating loose, lax and what a schoolboy would call sloppy views." The medical profession was presumably intended to fit this cap to its own head; the remark merely means that medical witnesses sometimes offer in a court of law views about insanity which judges cannot accept. The

difference between the medical and the judicial aspect is easily stated. If a young man suddenly murders his sweetheart and alleges a complete lapse of memory and a complete absence of intention, a medical practitioner will probably begin to consider the possibility of epileptic mania, nor will he be entirely dissuaded therefrom by the fact that there is no detailed history of epilepsy. On the other hand, the judge will accept no such suggestion unless supported by adequate evidence. He cannot fail to be aware of the danger which will ensue to the public if every murderer can escape the consequences of his crime by saying that he has forgotten all about it. In Lord HEWART'S words, "a wrongful plea of insanity" gives "carte blanche to the assassin." These two views cannot be reconciled. The opportunity to bring them closer together failed when the Atkin committee rejected certain medical representations at its investigation of the criminal responsibility of the insane after the case of Ronald True.

Meanwhile it is worth remembering that so good a judge as the late Mr. Justice MCCARDIE was not a little concerned with the criminal aspects of epilepsy in the case of True. He was disposed to say that the legal rules in McNaghten's case did not touch either epilepsy or puerperal mania. In addition to the usual questions framed to secure an answer as to the presence or absence of criminal intent in the face of a defence of insanity, he left to the jury the specific question whether True took the dead girl's life whilst in an epileptic seizure—and this notwithstanding what he described as the extraordinary weakness of the evidence of epilepsy. The jury, it will be remembered, answered all questions by simply finding True guilty of wilful murder. And yet True was not executed. He was certified insane after the trial, although the law deemed him sane enough to be found guilty. The puzzle which the legal profession sets for the medical profession is this: a person of unsound mind may in the legal view be criminally responsible, for insanity and irresponsibility are not legally coextensive.

ANNOTATIONS

AN INQUIRY INTO THE RELIEF OF SYRINGOMYELIA BY OPERATION

OUR ignorance of the exact pathological process in syringomyelia, and our knowledge that in the natural course of the disease its progress may be interrupted by long periods of quiescence, render the evaluation of operative treatment a difficult matter. The problem will be solved only by the study of a sufficient number of cases before and after operation. Prof. R. E. Kelly's account of a series of ten cases (communicated to the Medical Society of London on Monday last) in which, with the collaboration of Prof. Henry Cohen, he has made careful records of the clinical picture, the condition of the spinal cord, and the subsequent course of the disease in every case, must therefore rank as a valuable contribution to surgery.

Victor Horsley was probably the first to operate for syringomyelia, but as his work was not published the credit for exploring the possibilities of surgery in this disease must go to the many continental surgeons who have followed the lead of C. A. Elsberg (1916) and have drained the cystic spaces in the cord by myelotomy. It was the remarkable case published by L. Poussepp (1926) in which a cavity extending the entire length of the cord was first demonstrated by the injection of lipiodol and subsequently drained with dramatic relief of symptoms, which aroused Prof. Kelly's interest in the subject, but he confesses with praiseworthy candour that in none of his ten cases has he observed improvement comparable to that described by Poussepp. Exploration of the spinal cord is certainly justifiable when the signs are those of syringomyelia and there is evidence of a block in the subarachnoid space, for in such cases the lesion may be an intramedullary new growth. If when the cord is exposed it is seen to be swollen, and if on aspiration the swelling proves to be a cavity of syringomyelia, no harm is done by incising the cord and so draining the cavity, and some improvement may be expected both in the upper and in the lower extremities. Relief of spasticity in the legs is frequently observed in such cases and must be due to release of pressure upon the long tracts, or to diminution of œdema around the cavity which impaired their function. But the main reason for advocating operation in this group is to establish the diagnosis. It must be remembered that even a cerebro-spinal fluid block may disappear after a course of X ray treatment, and it may therefore be argued that unless there is some very good ground for suspecting that the diagnosis is incorrect, it is always wiser to subject the patient to a course of X rays before the question of operation is considered. Should the symptoms persist or increase in spite of radiotherapy then operation is certainly justifiable. When there is no evidence of a block in the subarachnoid space radiotherapy is unquestionably the correct method of treatment. Apart from the fact that the cavities in the cord may be multiple and operation may therefore be incapable of dealing with the whole of the disease, the main drawback with which the surgeon has to contend is the delay in healing of the operation wound and the consequent risk of infection. This is illustrated in Prof. Kelly's series, for 2 out of his 10 patients died of meningitis, and 2 cases were complicated by a leak of cerebro-spinal fluid. There seems to be no ground, however, for the statement which occurs in certain text-books that patients with syringomyelia are likely to die suddenly after an anæsthetic; all the patients in this series were given endotracheal ether anæsthesia without any untoward effect.

Though most of his patients showed some improvement, Prof. Kelly expresses disappointment with the results of the operation. The beneficial effect is most noticeable in the sensory and trophic manifestations, and in the diminution of spasticity in the legs, but muscular wasting and weakness in the hands is very little affected. When pain is a prominent feature, and if relief is not quickly obtained after X ray treatment, operation should be undertaken with a fair prospect of alleviating the patient's suffering. There is as yet no evidence that surgery can prevent recrudescence of the disease at a later date, and it is questionable whether operation has any advantage in this respect over radiotherapy. Considering the extensive damage done to the cord by the pathological process, it is unreasonable to expect any striking

recovery of function from any form of treatment, but the position as regards surgery may be summed up by saying that rather more than half the patients are likely to derive benefit from the operation, and that a quarter may die from post-operative infection. It is matter for consideration whether a patient should be exposed to such a risk except when severe pain or a block in the subarachnoid space does not disappear after a course of X ray treatment.

RE-EDUCATION IN SQUINT

ONE of the chief differences between A. Cantonnet, the French ophthalmologist who has devoted much of his life to the study of strabismus, and British authorities is as to the most favourable age at which to practise re-education. Worth found that the most favourable age for convergent squinters was before five or at any rate seven years old. Cantonnet puts five or seven not as the upper but as the lower limit of age, and claims good results in adults up to about 30 years of age. We review on another page the translation of an important work in which, with two collaborators, he expounds his main thesis of re-education. In the re-education of squinters Cantonnet's main idea is what he calls the mental effort. Of course the deviating eye must not be too amblyopic, but if the vision in it is about as good as 6/24 he considers it possible, by means of mentally fixing a distant object placed above the level of the horizon, gradually to effect a cure even in cases of a high degree of deviation. Adolescents, he says, are better able to make a mental effort than children, and it requires a certain maturity of intelligence to develop one's imaginative powers. He seems to ignore Worth's powerful argument that the fusion sense is best trained during the early years when it should normally be perfected. Moreover, the interest aroused in children by amusing pictures, &c., is found to be at least the equivalent of the mental effort demanded by Cantonnet of adults. The various steps in the orthoptic treatment of a squinter are as follows: (1) to correct as exactly as possible any refractive error which may exist; (2) to conquer the amblyopia of the squinting eye if any is present; (3) to overcome the neutralisation of the squinting eye so as to secure simultaneous vision; (4) to pass from simultaneous to binocular vision; (5) to obtain the sensation of relief—i.e., stereoscopic vision. Of course all this takes time, and it is of no use entering on a course of orthoptic training unless the necessary time can be given. As to operation, Cantonnet is inclined to minimise its utility, and yet it would seem self-evident that in many cases an efficient advancement of a muscle must materially shorten the time necessary for orthoptic training to achieve a successful result. Cantonnet himself states that, roughly speaking, the re-education of convergent squint necessitates a week or a week and a half per degree of deviation, the patient attending regularly his séances of exercises at least once a week, and in the intervals carrying on the home exercises which are a sine qua non condition of success. It is true that in those cases where the process of re-education ceases to progress Cantonnet does operate, but in his opinion re-education should constitute the beginning and the end of the cure where it does not constitute the whole of the treatment. In the opinion of most authorities only a minority of convergent squinters are capable of re-education, but Cantonnet holds the proportion to be at least 70 per cent. The main points of difficulty are: (1) To prevent the development of amblyopia in a squinting eye. Measures for this purpose must obviously be undertaken at the earliest possible age. (2) To overcome neutralisation and establish simultaneous vision; at this stage there must be diplopia. (3) To pass from simultaneous to binocular vision, or, in other words, to cultivate the fusion sense by appropriate devices. When this is once obtained it must be frequently practised in order that it may be retained. The final stage, the attainment of the sense of relief or stereoscopic vision, does not present nearly such great difficulty.

RADIUM RESEARCH: TWO GENEROUS DONATIONS

A PAPER was read by Prof. Berven of Stockholm before the section of laryngology of the Royal Society of Medicine on March 1st, dealing with the progress being made in Sweden with the treatment of certain forms of cancer by radiation from large masses of radium. This report of Swedish work lends particular interest to the news that two generous donations have recently been made towards scientific research of a similar nature now in progress in this country. The sum of £2500 now given by the J. G. Graves Charitable Trust (founded by Alderman J. G. Graves of Sheffield) and £1000 from Mr. Harry Oakes of Canada, come at an opportune time, since the research work, which by its nature is extremely costly, is now entering upon its second year. It will be recalled that this research was instituted under the auspices of the Medical Research Council and the Department of Scientific and Industrial Research, who, together with the Prophit Trust (through the Royal College of Surgeons) and the Royal College of Physicians, have hitherto met the costs by generous grants. The work was further assisted by the loan of radium in the necessary large quantity by the Union Minière du Haut Katanga of Brussels. It is directed by the Radium Bean Therapy committee set up in July, 1933, of which the members are Lord Dawson of Penn, Sir Holburt Waring, Mr. Wilfred Trotter, F.R.S., Lord Rutherford, F.R.S., Prof. A. J. Hall, Sir George Blacker, and Sir Cuthbert Wallace, under the chairmanship of Sir Gowland Hopkins, P.R.S., with Prof. J. C. McLennan, F.R.S., as secretary-treasurer.[1] In the last annual report of the Medical Research Council it is stated (p. 116) that attention is at present being concentrated on the treatment of malignant conditions of the mouth and throat.

RECTAL EXAMINATION DURING LABOUR

FROM time to time obstetric teachers have declared that rectal examination should be preferred to vaginal examination for routine use during labour. Sciclounoff[2] reports that, in search of a ruling on this point, he has circulated a questionnaire to some 280 obstetric specialists in different countries, and has received over 100 replies. Statistical evidence, he believes, gives no help; for although there have been many and extensive investigations, some of them show that maternal morbidity is higher with vaginal examination, while others demonstrate the exact opposite. In the questionnaire information was required as to whether rectal examination was used; to what extent it could be relied upon; whether midwives should be allowed to perform vaginal examinations; whether students were taught to perform pelvic examinations per vaginam or per rectum; and whether it was thought that vaginal examinations were associated with a raised morbidity compared with rectal. The replies showed that the

[1] See THE LANCET, 1933, ii., 135.
[2] Sciclounoff, T.: Rev. franç. de gyn. et d'obst., January, 1935, p. 1.

rectal examination was used by only a few obstetricians, and that it was considered by the great majority to be insufficient in both normal and abnormal cases. Furthermore three out of every four that answered felt that vaginal examinations could not be prohibited to midwives. Students, almost universally, were taught to practise the vaginal examination, and provided they were thoroughly drilled in technique the procedure was held to be harmless. Sciclounoff observes that even the most ardent advocates of examination by the rectal route advise resort to the other in doubtful cases, and that if such an examination is performed but rarely the technique is going to be far less perfect than if it is used as a routine. It is harder to acquire information from the rectal examination—H. W. Mayer [3] estimates that a man must follow at least 100 patients through labour before being sure of his rectal findings—and medical students in their short training have difficulty enough already in interpreting what they encounter per vaginam. Lastly, it is suggested that rectal examination at this time is disagreeable both to patient and doctor.

In collecting so many facts and opinions, not only from his questionnaire but from published papers, Sciclounoff has undoubtedly helped to establish the value of a careful examination and to emphasise the need for a rigorous technique in its performance.

A CHINESE SCIENTIFIC ACHIEVEMENT

THOSE who have faith in the scientific attributes of the Chinese people will be heartened by the appearance of a magnificent volume, printed and bound in China by the Mercury Press of Shanghai, containing the transactions of the Ninth Congress of the Far Eastern Association of Tropical Medicine [4] held in Nanking, China, from Oct. 2nd to 8th, 1934. It is edited by two distinguished medical officers of the National Quarantine Service, Wu Lien-Teh and C. Y. Wu, and has been produced to a great extent by Chinese labour and brains. The frontispiece is a message from His Excellency Lin Sen, president of the National Government of the Republic of China, in native script. The scope of the work is evident from the first 80 pages, which contain a list of the agenda, the composition of the various committees, a list of the representatives of the countries taking part, and a résumé of the speeches made, of the minutes, and of the resolutions passed at the various meetings of the delegates. The list of delegates and members is a formidable one, and consists mainly of native medical practitioners.

The scientific matter is divided into headings dealing with bacteriology, biochemistry, cholera, dermatology, medical entomology, helminthology, kala-azar, and leprosy. C. E. Lim and T. J. Kurotchkin have studied the sensitising properties of gram-negative and gram-positive bacteria. The studies on typhoid agglutinins occupy many pages, and include a comparative investigation by S. M. Tao of the virulence and antigenic properties of *B. typhosus* and an inagglutinable Chinese strain. D. H. Wong has two papers upon the "O" agglutinins of the enteric fevers, and also upon the occurrence of dysentery agglutinins amongst the Chinese people. A most interesting and complete study of dysentery in the Japanese Navy comes from the pens of T. Shibata and S. Murakami. Typhus exanthematicus in the north of China has been studied by J. Tchang and S. Lotsong, whilst R. Lewthwaite and S. R. Savoor publish a résumé of their studies on tropical typhus and the tsutsugamushi disease as encountered in the Federated Malay States. In the biochemical section J. L. Rosedale writes with C. J. Oliveiro upon the fat-soluble vitamins of tropical food oils, and with L. P. Chong on the relationship of vitamins B and C to beri-beri. Eric Reid has studied the nutritive properties of soybean-egg powder as a substitute for cow's milk in the infant dietary. Cholera in India is discussed by A. J. H. Russell, and an analysis of disease in China is made by J. W. H. Chun. Among the remaining papers one on the histology of Filariasis bancrofti by D. Y. Ku and Z. M. Kao is noteworthy, and there is also a remarkable study, containing novel observations by S. Yoshida, on the life-history of *Gnathostoma spinigerum* which apparently takes place to some extent in the body of the cyclops. A second volume which will complete the record of the congress is in preparation, and will be welcome.

[3] Surg., Gyn., and Obst., 1932, lv., 771; see THE LANCET, 1933, i., 33.

[4] Published by the National Health Administration of the Republic of China, Nanking. 1935. Vol. I. Pp. 790. £2 (for two volumes).

THE JAMES MACKENZIE INSTITUTE

"WE define our object as the prevention of the diseases that are common amongst the people" wrote Sir James Mackenzie of the Institute for Clinical Research at St. Andrews which now bears his name. "The principles which guide us are, first, clearly to recognise each individual symptom and differentiate it from others which it resembles; second, to understand the mechanism of its production; and third, to assess its value, so far as it has a bearing on the future course of the disease—in other words, its prognostic significance," The methods which Mackenzie elaborated to achieve that object, and the lines of study which he suggested, are still followed in St. Andrews, although increasing knowledge has, in some instances, led to the adoption of shorter routes than those originally devised. The town and its neighbourhood provide ample material for research into ailments, temporary and otherwise, affecting the population as a whole or individually. It has frequently been found that the most valuable information is to be derived from an intensive study of individual cases. Thus records of life-histories from birth onwards, and of special cases, continue to be kept in order that signs which reveal disease, show its progress, or indicate danger can be recognised. Staff meetings are held weekly at which cases and groups of cases are submitted for discussion. These meetings are regarded as one of the most important parts of the work of the Institute, since they afford an opportunity of pooling the knowledge and experience of the members, and where possible, of correlating the information thus acquired with the application of broad principles. As noted in the fifteenth annual report (mentioned last week, p. 558, in a leading article) individual members of the staff are engaged in investigating such subjects as hyperpiesis in women, the bacteriology of catarrhs, and the ætiology of gastric and duodenal ulcers. Other subjects discussed at the weekly meetings include blood pressure, otitis media, scarlet fever, preservation of life of the unfit, pain, diverticulitis, and epilepsy. A prominent place is given to the consideration of the various manifestations of cardiac disease. Recent publications have dealt with ocular manifestations of the onset of disease, the mechanism and significance of pain, the prognostic significance of sinus arrhythmia, recognition of the cardinal signs of influenza and its differentiation from common catarrhal illnesses, and the relation between disease and excessive consumption of carbohydrates. It has been the endeavour of the members of the Institute to adapt Mackenzie's principles and methods to the various departments of clinical research

and it is encouraging to them to note the increasing influence of Mackenzie's teaching throughout the whole field of medical research. Mackenzie himself had no great expectation of rapid results. He insisted that prolonged training in the detection of symptoms and years of careful observation of patients would be necessary before realisation of his chief objects became possible. It is to be hoped that some means may be found to relieve the financial embarrassment which at present cumbers the activities of the Institute.

DIAGNOSIS OF DERMATITIS HERPETIFORMIS

IN the differential diagnosis between pemphigus and dermatitis herpetiformis, Darier and Tzanck [1] base their criteria on the theory that the latter is an allergic reaction. As in eczema—which is now generally regarded as a manifestation of allergy—the eruption is polymorphic, with urticarial lesions predominating at one time, vesicles or bullæ at another. Again, as in eczema, there is always severe pruritus, and blood changes tending towards eosinophilia, while spontaneous involution and occasional crises are also common to the two diseases. In pemphigus, on the other hand, these characteristics are absent, and we find instead a degenerative or dystrophic type of lesion in which the epidermis will often slide off its underlying tissue on friction or lateral pressure (acantholysis: Nikolski's sign) even when the skin is apparently healthy. The distinction is important, for in pemphigus the prognosis is serious and the mortality very high. Real difficulty in diagnosis begins, however, when dermatitis herpetiformis has to be differentiated from bullous erythema multiformis, a halogen eruption, or one occurring in the course of salvarsan medication, for example. The two conditions may in fact be indistinguishable in their category—i.e., as allergic reactions in susceptible subjects. It seems reasonable, therefore, to follow Darier and Tzanck's suggestion, that one should constantly bear in mind the distinction between (1) the results of a susceptibility which must have some external cause, and (2) a condition which is almost certainly not a "reaction" in the same sense, but rather the disease itself—that is to say, a dystrophy or vital degeneration of the tissues concerned.

DOCTOR AND LAYMAN

THE Hastings lecture of the British Medical Association was founded with the idea of keeping interested laymen in touch with medical views and their application to personal health. The choice of the regius professor of physic at Cambridge as this year's lecturer was a happy one, and Sir Walter Langdon-Brown's address last Tuesday, entitled Art and Fashion in Medicine, contained many valuable reflections both on his profession and on the public it serves. Man, he said, is all too apt to look back longingly, like Lot's wife, upon the past with its magic and ritual. Our reason is a more recent acquisition than our emotions, and the quack appeals to an older Adam than the physician. When the doctor threw away his gold-headed cane—the symbol of authority—and tried to base his practice on rational and scientific procedure he lost a powerful weapon; and Sir Walter thinks this must account for the loss of confidence in the medical profession seen on every hand to-day. "Another source of misunderstanding between the doctor and his patient is that this is a machine-minded age, and the layman tends to think of his body too much in the terms of a machine in which a spare part can be replaced. If biology were a subject of general education, people would understand more of nature's methods and be less credulous as to what can or cannot be accomplished." So much for the faults of the patient; but the lecturer had also fault to find with his own profession. It is curious, he said, that the four chief articles of Hippocratic practice—cleanliness, fresh air, dream analysis, and psychological explanation—were almost entirely lost by medicine until quite recent times. Now fortunately the dualism of mind and body has broken down under the assaults of psychologically minded physicians; disease and unhappiness alike can be interpreted as the resultant of forces in the individual and his environment. "This new synthesis of mind and body," in Sir Walter's opinion, "is the outstanding achievement of twentieth century medicine," and the doctor of the future will have to come doubly armed—with material aid for physical troubles and psychotherapy for distresses of the spirit. Meanwhile it behoves our profession to do what it can to prevent the promulgation of alarmist ideas; "for never have people fussed more about their health than they have to-day."

ANÆMIA FOLLOWING GASTRECTOMY AND GASTRO-ENTEROSTOMY

THE relationship of gastric operations to anæmia is still under discussion. S. J. Hartfall [1] in a study of 40 cases of anæmia following gastric operations has confirmed many of the older findings and has also added certain new facts to our knowledge of the mechanism involved in the production of such anæmias. The hypochromic type is far more common than the hyperchromic megalocytic anæmia simulating pernicious anæmia. The anæmia may be as severe after gastro-enterostomy as after partial gastrectomy. It also appears that the amount of stomach removed has no constant relation to the development of anæmia, though the figures available suggest that possibly anæmia is more common when the Polya type of operation is performed—i.e., when the duodenum is occluded and anastomoses are made between stomach and jejunum. The anæmia is more common in women than in men and most frequent between the ages of 40 and 50 years. The presence or absence of free hydrochloric acid appears not to affect its development. Following a gruel test-meal Hartfall found that 40 of his patients had achlorhydria, but of 24 reinvestigated 9 showed free hydrochloric acid following histamine. The clinical features he found associated with anæmia were similar to those encountered in idiopathic hypochromic anæmia, including slight splenomegaly, glossitis, and dystrophy of the skin and nails. X ray examination showed that in the majority of patients there was a considerable degree of gastro-intestinal dysfunction. An opaque meal was found to leave the stomach with great rapidity and to pass along the small intestine, cæcum, and ascending colon with unusual speed. This state of small intestine diarrhœa, must, Hartfall concludes, contribute largely to the development of anæmia through interference with intestinal absorption. The fact that the majority of anæmic patients in his series complained of various forms of gastro-intestinal discomfort suggests also that gastro-intestinal dysfunction must be present. Extreme modifications of diet, adopted to lessen the severity of the gastro-intestinal symptoms, had frequently been ordered. These modified diets were grossly defective in both

[1] Darier, J., and Tzanck, O: Derm. Woch., Jan. 19th, 1935, p. 73.

[1] Guy's Hosp. Rep., 1934, lxxxiv., 448.

mineral and vitamin content. Insistence on an adequate diet should form an important part of all post-operative gastric treatment and should go far towards preventing the development of anæmia.

CLINICAL RESEARCH IN L.C.C. HOSPITALS

THAT advantage was already being taken of the unrivalled opportunities for research afforded by the hospitals and clinics now under the control of the London County Council is clear from the medical supplement to the report on the hospital services compiled under the direction of Sir Frederick Menzies.[1] More than 50 separate articles and reports or analyses of results are included, some by individuals and others by groups of co-workers. Some of the authors are full-time medical officers of the Council of varying seniority; others are part-time consultants—for example, Sir Comyns Berkeley, who gives interesting statistics of the work of the radium centre for carcinoma of the uterus at the North-Western Hospital, and Dr. Macdonald Critchley, who contributes a communication on reflex epilepsy made to the Zurich Neurological Society in 1933. Five workers at the group laboratory, Archway Hospital, report on biological tests of pregnancy by Friedman's method. Excepting two "doubtful" results, the test was accurate in 81 out of 86 cases (94 per cent.) which were available for analysis. The results obtained at Carshalton with "iodine powder" in the treatment of chronic otitis media appear to justify the conclusion that this should be the first method tried. The full details of pre- and post-operative treatment practised at the goitre clinic, New End Hospital, and the description of the steps of the operation will be found most useful in other centres. The statistics of the maternal deaths in the Council's hospitals for the year under review demonstrate the value of the routine supervision of the pregnant woman. The late results of treatment at St. Giles' Hospital of 82 cases of fracture of the neck of the femur in elderly subjects, as estimated from the replies to a questionnaire received from 30 patients, were disappointing. The administration of paraldehyde per rectum as a preliminary to general anæsthesia has found favour alike with patients and medical and nursing staff at St. Andrew's Hospital, where it was tried in 200 consecutive surgical cases.

These samples of the kind of observations being recorded by the medical officers working for the L.C.C. give promise of the great opportunities for coördinated research which are offered in its general and special hospitals.

BRITISH HEALTH RESORTS

IN his foreword to the third edition of the Official Handbook of the British Health Resorts Association, Sir Hilton Young remarks that even amongst the medical profession the extent and variety of the health-giving properties and services available at our coastal resorts and inland watering-places are not always fully appreciated. It is for the express purpose of developing a discerning appreciation that the Association is bringing out each year a new edition of a publication which the general secretary of the Association, Dr. Alfred Cox, believes has no parallel in this or any other country. Last year the principal spas and seaside resorts of New Zealand, South Africa, and Canada were included in the handbook; next year it is hoped to do the same for the health resorts of Australia. A new section of the handbook deals with the rôle of the winter health resort. In spite of unpleasant evidence to the contrary during the last week-end it is nevertheless true that the British Isles enjoy a climate 20° F. warmer than would be proper to their latitude. Moreover, the daily range of temperature is low, amounting only to 10–12° F. in the west country where mists or fogs are rare in the winter, and the nights are considerably warmer than in the Riviera. If a winter resort does no more than enable some house-bound person to spend several hours daily in the open air it has already justified its existence. The Association which issues the handbook is the only organised body which specialises on the value of our inland and coastal resorts as health resorts. Each year it holds a series of conferences; in 1934, for instance, the objectives were Harrogate, and Cromer with Sheringham. These are to be continued indefinitely, for, as is frankly admitted, much remains to be done before the science of the health resort can be said to have been fully explored. While no doubt this is true, the handbook in its third edition is already a very complete and attractive publication. It is published by Messrs. J. and A. Churchill Ltd. at 1*s*.

SPLANCHNIC SECTION FOR HYPERTENSION

THE term "essential hypertension" implies that so far as our knowledge yet goes the disorder is not secondary to renal disease or other focal organic lesion. Its treatment must therefore be tackled on the assumption that there is no need for the high blood pressure, and since a persistently raised pressure must eventually bring about degenerative changes in the vessels, it is right and proper to reduce it if we can. Seeing that essential hypertension seems often to run in families, and that constitutional characteristics are held to play an important part in its ætiology, local changes in the vasomotor centre have been postulated as its underlying cause. And since the vasomotor centre acts principally through the splanchnic reservoir, many surgeons, both on the continent and in America, have tried to lower the blood pressure by section of the splanchnic nerves. Thus Craig and Brown[1] record their observations in 5 patients whose major and minor splanchnic nerves were cut on both sides; but they say that although there was an immediate fall of pressure after the operation this improvement was not maintained. Adson[2] has carried the procedure a step farther by cutting the anterior spinal nerve-roots from Th. 6 to L. 2 on both sides, thus paralysing the abdominal wall as well as the splanchnic nerves. He found that there was a definite fall in blood pressure after the operation, and that it fell still lower when the patient stood upright; it could be made to rise again slightly by wearing an abdominal support. This method of treatment, however, involves a very extensive operation, and the paralysis of the abdominal wall may prove a serious handicap, if not a source of danger to the patient.

There seems to be no ground for supposing that the cause of the disease lies in the blood-vessels themselves, and it is therefore natural to look for excess of pressor substances, or deficiency of depressor substances, in the blood stream. Though hypertension could result from depressed activity of the carotid sinus, or from deficiency of a depressor substance normally produced in the pancreas, more attention has been

[1] Annual Report of the Council, 1933. Vol. IV., Part III: Public Health. London: P. S. King and Sons, Ltd. 1935. Pp. 223. 5*s*.

[1] Craig, W. M., and Brown, G. E.: Arch. Internal Med., 1934, liv., 577.

[2] Adson, A. W., and Brown, G. E.: Jour. Amer. Med. Assoc., 1934, cii., 1115.

given to the possibility that a pressor substance is formed in excess by the suprarenal glands. Adrenaline can now be detected in minute traces in the blood, but those who have investigated the blood of patients with hypertension are unable to agree that these people show it in abnormally large quantities; and despite the observation that tumours of the suprarenal medulla may be associated with high pressure, Crile [3] has found that denervation of the suprarenal glands is valueless except in so far as it may prevent the violent exacerbations produced in these patients by emotional stimuli. A more encouraging report, however, comes from DeCourcy [4] and his colleagues, who noted improvement in 6 patients after removal of three-quarters of both suprarenal glands, and who deduce a strict parallelism between hyperthyroidism in Graves's disease and hyperadrenalism in essential hypertension. They claim to have observed hyperplastic changes in the medulla of these excised suprarenal glands, and if their therapeutic success and their pathological findings are confirmed, a real advance may be made in our understanding of this baffling disorder.

ST. GEORGE'S HOSPITAL

As all know, and we believe with the approval of all, the governors of St. George's Hospital have decided to rebuild the hospital on the original site; to effect this purpose an appeal is necessary to the public for the large sum of £1,000,000, in response to which a modern hospital with 500 beds will replace the present obsolete building at Hyde Park Corner. The reasons that have led the governors to this decision have been stated publicly, and account in detail for the large sum required. They have been given in a convincing manner, and may be resumed briefly as follows: (1) it is imperative that the hospital should be brought up to date without further delay; (2) it is impossible to sell the site at any sum representing its true value; and (3) it is impossible to find any other suitable site in the neighbourhood to which the institution can be removed. We learn now that the new hospital can be built in sections without the complete closure which would destroy the continuity of service, essential alike to public needs and the prosperity of the school. One of the strongest arguments in the public eye for the bold policy adopted will be its generous support by old St. George's men, and a committee has been formed to make such a movement prompt and audible. All former St. George's men are asked to communicate with Dr. J. Torrens, senior physician to the hospital, as chairman of the "Old St. George's men committee," and to promise what support they can give personally or through the medium of their friends and patients. The wise suggestion is made by the committee that it should be kept informed of any persons who have been thus approached so that the same individuals should not be further canvassed. Evidence that St. George's is willing to help itself will plead powerfully with the public invited to help it.

THE Royal Society of Medicine promises an entertainment of a novel character. The wide popularity of Mickey Mouse as the chief actor in preposterous adventures at the cinema has led the society to make an address on the embryology and anatomy of the charming monster the central feature of an evening reception. This will take place on Thursday, April 11th, at 8.30 P.M., when Mr. Robb Lawson will be the demonstrator of the theme.

A SERIES of debates has been arranged by the National Council for Mental Hygiene and will be held in the hall of the Royal Society of Tropical Medicine and Hygiene (26, Portland-place, London, W.) on Wednesdays at 8.30 P.M. They will begin next week when Dr. C. P. Blacker and Dr. Halliday Sutherland will open a discussion on the legalisation of voluntary sterilisation. On March 27th the speakers are Dr. Edward Glover and Mr. J. Platts-Mills, and the subject is "that theft is frequently a symptom of disease." On April 3rd Dr. H. Crichton-Miller will speak against the motion "that competition is a help to mental health"; (the proposer's name will be announced later). The last debate will be on April 10th, when Dr. William Brown and Major C. H. Douglas discuss psychological factors in the causation of war. Tickets may be had from the secretary of the council, 78, Chandos House, Palmer-street, London, S.W.1.

ON Tuesday, March 19th, and Thursday, the 21st, Dr. J. Shaw Bolton will deliver the Lumleian lectures of the Royal College of Physicians of London. He will speak on the evolution of mind, and the lectures will be delivered in the College at 5 P.M. Members of the medical profession will be admitted on presentation of their card.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Rear-Admiral G. L. Buckeridge, O.B.E., to *Victory* for Haslar Hospital.

Surg. Lt. W. Greaves to *President* for course.

ROYAL AIR FORCE

Air Commodore Alfred William Iredell, K.H.P., is appointed Director of Medical Services, Air Ministry, March 1st, 1935, vice Air Vice-Marshal John McIntyre, C.B., M.C., K.H.S., who is placed on the retired list at his own request (vide also THE LANCET, Jan. 26th, p. 224).

Air Commodore Albert Victor John Richardson, O.B.E., is appointed an Honorary Surgeon to The King, vice Air Vice-Marshal J. McIntyre, who relinquishes that appointment on retirement.

Flight Lt. R. L. Raymond relinquishes his short service commission on transfer to the Indian Medical Service. (Substituted for the notification in the *Gazette* of Jan. 29th.) (Vide THE LANCET, Feb. 9th, p. 344.)

Squadron Leaders T. J. D. Atteridge to Headquarters, Coastal Area, Lee-on-the-Solent, for duty as deputy principal medical officer, vice Squadron Leader T. J. X. Canton; and W. E. Barnes to R.A.F. Hospital, Cranwell, for duty as medical officer.

Flight Lts. J. Kemp to Princess Mary's R.A.F. Hospital, Halton; J. McGovern to Aircraft Depôt, Iraq, Hinaidi; and O. M. Fraser to No. 3 Armament Training Camp, Sutton Bridge.

Flying Offr. G. H. Morley to No. 1 Armament Training Camp, Catfoss.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: S. C. Contractor and S. D. Sondhi, M.C.

The undermentioned officer has vacated his appt. in India: *D.A.D.P.:* Maj. R. A. Hepple, M.C., M.B., R.A.M.C.

The undermentioned appt. has been made in India: *D.A.D.P.:* Capt. W. H. Carter, M.B., R.A.M.C.

Dr. J. C. Dixey has been appointed Admiralty Surgeon and Agent for Barnstaple, Dr. T. Lucas Hillier for Boscastle, Dr. B. Martin for Bridgwater, Dr. E. Tonge for Beer, Dr. J. F. Falconer for Brixham, Dr. R. C. S. Flood for Newry, and Dr. J. A. Neilan for Seaham Harbour.

[3] Crile, G.: Trans. Amer. Surg. Assoc., 1934, lii., 312.
[4] DeCourcy, J. L., and DeCourcy, C., and Thuss, O.: Jour. Amer. Med. Assoc., 1934, cii., 1118.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XLIV.—PROGNOSIS OF HEART DISEASE IN PREGNANCY

THE problem of heart disease in pregnancy is essentially one of prognosis; and it is a problem of vital importance, for a correct prognosis enables us to take such preventive measures as are necessary to minimise both the immediate danger of a fatality at the time of labour, and the more remote risk of a permanently crippled heart. The test of cardiac efficiency to which the mother is subjected during pregnancy is one of Nature's neatest experiments. The growing fœtus imposes a steadily increasing burden on the circulatory mechanism, while with the onset of labour there is a further sudden demand made upon the cardiac reserve. The life of both mother and child may depend on our ability to forecast correctly the result of this experiment, for on this we must base the decision as to whether pregnancy should be allowed to pursue its normal course.

In multiparæ the problem is relatively simple, for they have been through the mill before. Provided that the cardiac disability has become no worse since the last confinement, and provided that the pregnancies have not followed one another too quickly, there is little reason to fear that the strain will prove to be more exacting than on previous occasions. On the contrary, the first confinement is generally the most difficult, and we may reasonably expect that subsequent labours will be less prolonged.

In the case of a primigravida however this information is lacking, and it is correspondingly more difficult to assess the heart's probable liabilities. As one would expect the prognosis is worse in the first than in subsequent pregnancies. In our series there were 13 deaths amongst the 145 primiparæ (9·0 per cent.), and only 4 deaths amongst 155 multiparæ (2·6 per cent.).

During the past six years I have been endeavouring to collect some reliable data on this subject. Briefly, the conclusions reached as the result of this investigation are based on the clinical and laboratory findings in a consecutive series of 300 unselected cases of organic heart disease seen at the antenatal clinic or admitted directly to the wards of St. Mary's Hospitals, Manchester, and subsequently examined at the cardiographic department of the Manchester Royal Infirmary.[1] These patients were kept under observation throughout the later months of pregnancy, labour, and the puerperium to see how the damaged heart stood the additional burden it was called upon to bear. Many of them have been re-examined three, four, or five years after confinement, and 15 have been observed during more than one pregnancy.

THE IMMEDIATE PROGNOSIS

In our series of 300 cases, 17 deaths occurred either prior to or shortly after delivery. When one comes to analyse these cases, the first thing that strikes one is that out of 13 cases admitted directly to the wards as "urgencies" there were 9 deaths, whereas out of 287 patients who had been under medical supervision in the antenatal clinic there were only 8 deaths. This may to some extent be accounted for by the fact that the urgency admissions were particularly bad cases, but in my opinion an even more important factor is that at home they could not be so well cared for as they would have been in hospital.

It is impossible to over-emphasise the importance of adequate antenatal supervision in patients with heart disease. When treatment can be instituted as soon as the heart shows signs of beginning to fail it is almost always successful; whereas when the patient is not seen until heart failure is well advanced, the danger of a fatal issue is greatly increased. Adequate medical supervision I regard as one of the most important factors in prognosis.

Heart failure is an indication that the cardiac reserve has been reduced to such an extent that the heart is no longer able to meet its liabilities. When its liabilities can also be reduced, by further restricting the patient's activities, the outlook is favourable; but when heart failure persists in spite of confinement to bed, the outlook is much more serious. Occasionally heart failure is merely a temporary condition and attributable to some additional load such as that imposed by an attack of acute bronchitis. In these cases it usually disappears when the bronchitis clears up.

In our series of 300 cases, 21 patients had signs of congestive heart failure at the time they first came under observation. Of these 6 (4 of whom had not attended the antenatal clinic but were admitted as "urgencies") died prior to or soon after confinement, 5 are known to have died within the next four years, and 4 others to have been detrimentally affected. These figures indicate only too clearly the extreme gravity, from the prognostic point of view, of established congestive heart failure in women who are pregnant.

The second point I wish to make is that although the presence of heart disease was probably partially responsible for all these 17 deaths (with the single exception of a patient who died from intestinal obstruction), in 8 cases it was only a contributory factor. Conditions such as uræmia, pulmonary embolism, and septic complications following induction were responsible for these 8 fatalities. That leaves us with 8 patients (2·7 per cent.) whose death was directly attributable to heart failure. Of these patients 5 had auricular fibrillation. This is a finding to which I attach a very serious significance, not only because it is the common precursor of congestive heart failure in patients with chronic rheumatic heart lesions, but also because of the increased risk of embolism.

In our whole series of 300 cases there were 16 patients with *auricular fibrillation*. In addition to the 5 deaths mentioned above, 1 of these patients is known to have died shortly after returning to work. It is surprising how well some of these patients do in spite of the serious nature of their disorder, provided they receive adequate treatment commencing in the early stages of pregnancy. One woman who had attended my out-patient clinic for eight years with severe rheumatic heart disease and auricular fibrillation, kept begging me to allow her to have another child after her fourth and fifth pregnancies had been terminated in the early stages. With great reluctance and no small misgiving, I eventually gave my consent. She was allowed to go to the full term and delivered by Cæsarean section. Convalescence was uneventful. Two years have since elapsed, and there is no evidence that her heart has suffered any ill-effects.

[1] The expenses of this investigation were defrayed in part by a grant from the Medical Research Council.

There are two special findings, the importance of which has been stressed by writers on this subject—namely, the presence of cardiac enlargement and hæmoptysis.

Cardiac enlargement.—In patients with rheumatic heart disease, and in the vast majority of cases heart disease in young women is rheumatic (there were only 12 cases of congenital lesions in our series) the degree of cardiac enlargement may be taken as a rough index of the severity of the case. Generally speaking, the bigger the heart, the smaller its reserve. Nevertheless it seems to me that some writers have laid undue emphasis on the importance in prognosis of cardiac enlargement. The most I personally am prepared to say is that, other things being equal, the presence of great cardiac enlargement adds to the seriousness of the prognosis. Cardiac enlargement, however, is only one of many factors in prognosis and others, such as auricular fibrillation and congestive heart failure, are I believe, of even greater importance. This is well shown in our own series of cases in which several patients with big hearts did well, while in some of the fatal cases the heart was but little enlarged.

Hæmoptysis is a symptom which is always alarming to the patient, and which is generally considered to be of grave significance in prognosis. Thirteen of our patients exhibited this symptom, and three of them died. Of these, two were admitted to hospital as "urgencies," with acute heart failure, and the third had a pulmonary embolus three days after confinement.

Valvular lesions.—I have made no reference to valvular lesions because we have not found that they afforded us any help in prognosis. At the outset of this investigation we expected that patients who had aortic incompetence in addition to mitral stenosis would be bad risks. This has not proved to be so, and whereas all the 17 patients who died had mitral stenosis, only one had a lesion of the aortic valve.

Home environment.—In all types of chronic heart disease, the prognosis must be based not on the cardiac efficiency alone, but on the cardiac efficiency relative to the work which the heart is called upon to do, in other words the ability of the heart to balance its budget. This depends almost as much on its liabilities as on its assets. The outlook in the case of the working-class woman who has her housework and her children to contend with single handed, is very different from that of a well-to-do middle-class mother with a similar cardiac lesion. Whereas the latter can employ maids to do her heavy work and can have a nurse to help her with the children, the former has to carry on with her routine duties up to the last possible moment, and to return to them within two or three weeks of her confinement. She therefore requires a heart which is correspondingly more efficient than the mother whose financial circumstances are more fortunate.

The *temperament of the patient* is another factor which must be taken into account. Is she one who will cheerfully accept her limitations and carry out conscientiously the instructions given to her, or will she ignore prophylactic precautions and go her own way until she is pulled up by her overtaxed and failing heart? And lastly, when signs of heart failure have actually made their appearance, how does she respond to treatment? My own experience in these cases is that the early signs of heart failure promptly disappear with a few days in bed; and that in patients who can be kept under observation and who are prepared to coöperate with their doctor, even these signs need cause little anxiety.

THE REMOTE RISK

Hitherto I have considered only the immediate risk to the mother of pregnancy and labour. The question whether this additional strain, though producing no obvious ill-effect at the time, may give rise to a permanent aggravation of the cardiac disability and thereby tend to shorten life, is more difficult to answer. I have, however, two sets of observations bearing on this problem; 13 of our cases have been followed through two and 2 through three pregnancies. By comparing the condition during the later with that during the earlier pregnancy one can get a fairly good idea whether the cardiac efficiency has suffered further impairment. This was found to be the case in four patients, while two said that their condition had definitely improved.

It is notoriously difficult to keep in touch with hospital patients, especially those who are not sufficiently ill to require treatment. My colleague, Dr. Edith Longson, has, however, been able to ascertain the present state of health in 95 out of the first 150 patients in our series—i.e., those first seen between December, 1928, and March, 1932. Of these, 6 have died, 5 of them more than two years after their confinement, 3 died from influenzal pneumonia, and 3 from progressive heart failure. Of 55 cases re-examined, in 14 the cardiac condition appeared to have deteriorated.

The average expectation of life in patients with rheumatic mitral stenosis is generally believed to be from 10 to 20 years. If this view be correct, it implies that most patients with this type of heart disease die in the fourth decade. Hence it is difficult to say to what extent we are justified in regarding pregnancy as the predisposing cause of death in patients over thirty who succumb two or three years after confinement.

CONCLUSION

Let me summarise my experience by saying that the outlook in patients with heart disease who become pregnant is very much more hopeful than is generally believed. The risk is greatest in those with established auricular fibrillation or congestive heart failure. These two features I regard as definite contra-indications to pregnancy in all but very exceptional circumstances. The points to which I attach greatest importance in framing a prognosis in these cases are: (1) the condition of the myocardium; (2) adequate antenatal supervision; and (3) the temperament and home environment of the patient.

CRIGHTON BRAMWELL, M.D., F.R.C.P.,
Assistant Physician, Manchester Royal Infirmary; Consulting Physician for Women, St. Mary's Hospitals, Manchester.

JUBILEE CANCER FUND FOR CANADA.—It is announced in the *Canadian Medical Association Journal* that the jubilee of King George is to be marked by the institution of a silver jubilee fund in the Dominion of Canada, the proceeds to be devoted to the relief of cancer. The Governor-General, Lord Bessborough, will shortly inaugurate this fund, and it is pointed out in the *Journal* that no previous public appeal with the same object has been made in Canada. Dr. J. S. McEachern, president of the Canadian Medical Association, Dr. A. Primrose, C.B., chairman of the Cancer Committee of the Association, and Dr. A. G. Nicholls, the editor of the *Journal* of the Association, publish in the same issue powerful arguments for the institution of the fund and for its support. Dr. Primrose points out that his committee has already studied the situation in great detail, but have been frustrated so far in their effort to realise essential ideals by lack of funds.

SPECIAL ARTICLES

ATTENUATION OF MEASLES BY ADULT SERUM

By W. S. Burnet, M.B., D.P.H. Glasg.

LATE SENIOR RESIDENT ASSISTANT PHYSICIAN, KNIGHTSWOOD FEVER HOSPITAL, PUBLIC HEALTH DEPARTMENT, GLASGOW

During the measles epidemic which occurred in Glasgow in the spring of 1934 opportunity was taken to test the value of adult immune serum in the prophylaxis and attenuation of measles. By "adult immune serum" is meant the blood-serum from adults who have had an attack of measles in childhood. In order to have a store of serum on hand at the beginning of the epidemic, and also to enable the keeping properties to be proved, the collection of serum was begun at Knightswood Hospital during the winter of 1932–33 and carried on, as donors became available, right up to and during the epidemic. Owing to the unusually late appearance of the epidemic in the spring of 1934, batches of serum of different ages up to 18 months old were available. The serum was collected under aseptic conditions, Wassermann-tested, and stored in an ice-chest. A number of adult donors born and bred in the city stated that they had never had an attack of measles, and a smaller quantity of serum from such donors was collected in order to compare its value with that of adult immune serum.

The investigation was carried out on susceptible measles contacts in childrens' homes, and cross-infected wards of municipal hospitals, and comprises 31 exposures of this kind. The subjects of the investigation were therefore under close observation. The serum was given intramuscularly, and the usual dose was 20 c.cm. In a large number of the exposures a proportion of the susceptible contacts did not receive serum, and these acted as controls. The contacts were kept under observation until the twenty-first day after exposure to infection, and during that time their temperatures were taken four-hourly.

Character of measles in immunised contacts.—When measles occurred in immunised contacts, the type of attack was classified as (*a*) abortive, (*b*) attenuated, (*c*) modified, or (*d*) classical. Cases admitted to these categories showed the following characters:—

(*a*) *Abortive.*—No rash; slight or moderate pyrexia occurring after the usual incubation period, and accompanied by headache and slight eye suffusion; no Koplik's spots; no injection of buccal mucosa; recovery within 24 hours. Only four such cases occurred in the whole series.

(*b*) *Attenuated.*—No catarrhal symptoms; no Koplik's spots; sparse ill-defined rash; little or no pyrexia; no constitutional symptoms; no complications. An attack of this kind did not appear to differ in any way from a very mild attack of measles such as sometimes occurs in children who have not had measles serum.

(*c*) *Modified.*—Little or no catarrhal symptoms; no Koplik's spots; fairly bright and more or less typical morbilliform rash; slight or moderate pyrexia; no constitutional symptoms; no complications. The objective signs were those of a mild or moderate attack of measles, but the constitutional symptoms usually associated with such an attack were entirely lacking. From the onset the children were bright and alert; they playfully sat up or stood up in their cots, and they ate and slept well. The whole illness was not unlike that of rubella. Barenberg, Lewis, and Messer [1] in America noted this type of modification in a small series of measles contacts immunised with adult whole blood.

(*d*) *Classical.*—Catarrhal symptoms; Koplik's spots; typical rash; moderate or high pyrexia; characteristic toxæmia.

Classification of measles in controls.—Cases of measles in the "control" series were classified as very mild, mild, and classical. In general, cases admitted to these categories corresponded respectively with the attenuated, modified, and classical types which occurred amongst the immunised children, thus allowing a comparison of the severity of the attack in immunised and non-immunised contacts.

RESULTS

In all 168 susceptible contacts received an injection of adult immune serum. Of these 110 (65·5 per cent.) did not contract measles, 4 had abortive attacks, 25 had very mild or attenuated attacks, 11 had mild or modified attacks, and 18 had classical attacks (Table I.). Twenty susceptible contacts received an injection of serum from city-bred adults who had not had measles: of these 9 (45 per cent.) did not take measles, 3 took very mild or attenuated measles, and 8 took classical measles. As controls, 55 susceptible contacts did not receive serum. Of these 34 (61·8 per cent.) did not take measles, 1 had very mild measles, 2 had mild measles, and 18 had classical measles.

Table I.—*General Results*

Type of serum.	Contacts.	No measles.	Abortive measles.	Very mild measles.	Mild measles.	Classical measles.	Total mild measles.
Immune adult serum	168	110 (65·5%)	4	25	11	18	40 (23·8%)
Serum from adults who had not had measles	20	9 (45%)	—	3	—	8	3 (15%)
No serum (controls)	55	34 (61·8%)	—	1	2	18	3 (5·4%)

The proportion of naturally immune children may seem high, but the controls in each exposure were subject to the same conditions of infection as the immunised children—a most important condition, as it was clearly evident throughout the investigation that infectivity depended largely on propinquity, being great where the children were in close contact (e.g., in the convalescent homes), and small where the children were not in very intimate contact (e.g., in the hospital wards). That partial

Table II.—*Proportion of Measles Cases which were Mild in Immunised Contacts and Controls*

Type of serum.	Total cases of measles.	Abortive measles.	Very mild measles.	Mild measles.	Classical measles.	Total mild measles.
		Number and per cent.				
Immune adult serum	58	4 (6·9)	25 (43·1)	11 (19·0)	18 (31·0)	40 (69·0)
Serum from adults who had not had measles	11	—	3 (27·3)	—	8 (72·7)	3 (27·3)
No serum (controls)	21	—	1 (4·8)	2 (9·5)	18 (85·7)	3 (14·3)

[1] Barenberg, Lewis, and Messer: Jour. Amer. Med. Assoc., 1930, xcv., 4.

natural immunity does exist was shown by the fact that several of the immunised contacts, and also several controls, developed measles after a second exposure to infection. One control contracted measles only after the fifth exposure to infection.

From these figures (Table I.) it is apparent that adult serum is practically useless in the prevention of measles. If, however, attention be directed to the contacts who developed measles, it is found (Table II.) that the attack was mild in 69 per cent. of those cases immunised with adult serum, in 27·3 per cent. of those immunised with serum from adults who had not had an attack of measles, and in 14·3 per cent. only of those who did not receive serum. The attenuative value of adult serum is therefore considerable, whilst that of serum from adults who have not passed through an attack of measles is small.

TABLE III.—*Day of Exposure*

Day of exposure.	Number of contacts.	No measles.	Abortive measles.	Attenuated measles.	Modified measles.	Classical measles.	Percentage of measles cases which were mild.
3	30	16 (53·0 %)	—	7	4	3	79·0
4	10	6 (60·0 %)	—	4	—	—	100·0
5	17	11 (64·7 %)	—	2	—	4	33·3
6	93	66 (71·0 %)	4	11	5	7	74·0
7	18	11 (61·1 %)	—	1	2	4	43·0
Total	168	110 (65·5 %)	4	25	11	18	69·0

Effect of day of exposure.—The results of injection on the various days after exposure to infection are set forth in Table III.

The proportion of attenuated cases was relatively high when the serum was given on or before the fourth day of exposure to infection, but thereafter fell considerably.

TABLE IV.—*Day of Exposure*

Day of exposure.	Number of contacts.	No measles.	Total mild measles.	Classical measles.	Total measles cases.	Percentage of measles cases which were mild.
3–4	40	22 (55 %)	15	3	18	83·3
5–7	128	88 (68·7 %)	25	15	40	62·5
Controls	55	34 (61·8 %)	3	18	21	14·3

As shown in Table IV., when serum was given on the third and fourth days after exposure to infection, the attack was mild in 83·3 per cent. of those contacts who developed measles, whereas when given on the fifth to seventh days after exposure, 62·5 per cent. only of the measles cases were mild.

TABLE V.—*Age of Serum*

Age of serum in days.	Contacts.	No measles.	Abortive measles.	Attenuated measles.	Modified measles.	Classical measles.	Percentage of measles cases which were mild.
0– 50	12	8 (66·7 %)	—	3	—	1	75·0
50–100	23	12 (52·2 %)	—	7	3	1	87·0
100–150	15	10 (66·7 %)	—	2	2	1	80·0
150–200	33	20 (60·6 %)	—	7	4	2	84·0
200–250	3	2 (66·7 %)	—	—	—	1	—
250–300	4	2 (50·0 %)	—	1	—	1	50·0
300–350	15	7 (46·7 %)	—	3	1	4	50·0
350–400	22	16 (72·6 %)	—	1	1	4	33·3
400–450	11	8 (72·7 %)	1	1	—	1	66·6
450–500	—	—	—	—	—	—	—
500–550	30	25 (83·3 %)	3	—	—	2	60·0
Total .	168	110 (65·5 %)	4	25	11	18	69·0

Effect of age of serum.—An analysis of the results with serum of different ages is given in Table V., which shows that the attenuating power of the serum remained unimpaired for 200 days, but thereafter fell to a lower level, at which the potency was maintained for 550 days.

Interval between measles attack and donation of blood.—An attempt was made to ascertain whether the interval between the attack of measles and the donation of blood had any effect on the value of the serum. The donors invariably could not remember at what age the attack occurred, and so the age of the donor has been used as an index of the interval between the measles attack and the donation of blood. Table VI. sets forth the results with serum from donors of different ages, and shows that the attenuative value of the serum remained unimpaired in adults up to 50 years of age.

TABLE VI.—*Age of Donor*

Age of donor (years).	Contacts.	No measles.	Abortive measles.	Attenuated measles.	Modified measles.	Classical measles.	Percentage of measles cases which were mild.
15–20	31	19 (61·3 %)	1	6	2	3	75·0
20–25	32	19 (59·4 %)	—	6	2	5	61·5
25–30	26	19 (73·0 %)	1	3	1	2	71·4
30–35	24	18 (75·0 %)	—	3	1	2	66·6
35–40	27	19 (70·4 %)	2	3	1	2	75·0
40–45	14	9 (64·3 %)	—	2	1	2	60·0
45–50	14	7 (50·0 %)	—	2	3	2	71·4
Total .	168	110 (65·5 %)	4	25	11	18	69·0

Dosage.—The first few contacts received doses of 10 or 15 c.cm. adult immune serum, but, as uniform results were not obtained, a standard dosage of 20 c.cm. was adopted and maintained throughout the investigation. The foregoing results seem to indicate that where the injection is given later than the fourth day after exposure to infection, or where the serum has been kept for longer than six months, the dosage ought to be increased to about 30 c.cm. in order to obtain the best results.

Incubation period and infectivity of attenuated measles.—The incubation period was obtained by observing the interval between the first appearance of the rash in the infecting case and the first appearance of the rash in the contacts. The average incubation period was 12·6 days in the attenuated cases, 13·0 days in the modified cases, 13·0 days in the classical cases, and 12·0 days in the controls. The incubation period in the immunised cases did not therefore differ materially from that in the controls. Attenuated cases of measles are infectious, though probably less so than classical cases owing to the paucity or absence of the catarrhal symptoms. In several of the exposures an attenuated case gave rise to classical attacks both in immunised contacts and controls.

Duration of partial immunity.—Four of the immunised contacts developed measles after a second exposure to infection, occasioned by the occurrence of measles in an immunised contact or control. In each case the attack was attenuated. The maximum interval between the injection of the serum and the first day of the second exposure to infection was 10 days. The partial immunity conferred by the serum was therefore present for 10 days at least. Four of the controls developed measles after a second exposure to infection and in each case the attack was classical.

CONCLUSIONS

(1) Adult immune serum, when administered in 20 c.cm. doses to susceptible measles contacts, does not prevent the onset of the disease, but has considerable power in attenuating or modifying the attack. If given within the first four days after exposure to infection, the attack may be expected to be attenuated or mild in about 80 per cent. of those contacts who develop the disease; if given from the fifth to the seventh day after exposure to infection 60 per cent. of the measles cases may be expected to be mild. Normally when serum is not given about 14 per cent. only of the cases are mild. (2) The serum when stored in an ice-chest retains full potency for six months; thereafter the potency drops to about 60 per cent. of its former value but remains at this level for a year and a half. (3) The serum from adults up to fifty years of age is just as potent as that from adolescents and youths. (4) The serum from adults born and bred in the city, who have not had measles, has only very slight attenuating power. (5) Attenuated measles is infectious and the incubation period does not differ from that of classical measles. (6) The duration of the partial immunity conferred by the serum is at least ten days, but is probably somewhat longer.

MEDICINE AND THE LAW

The Radiologist's Report

THERE is nowadays no need to insist on the necessity of X ray examination in cases of possible fracture; but the evidence given at a recent inquest at Worcester is a useful reminder that a radiograph requires careful study and that the radiologist's report is something more than a mere formality. A woman, aged 79, was knocked down by a bicyclist on Saturday, Feb. 2nd; she declared she was not much hurt and, after a rest in a shop, she walked home unaided. That night her medical attendant ordered her removal to the infirmary where an X ray examination was made. It was the usual practice at the hospital for the radiologist to send to the ward the results of the photograph and his own report thereon; one of the nursing staff in the ward would sign a receipt for these. The radiologist did not see the photograph till the next day (Sunday) when he reported "fracture of the neck of the right femur." Unfortunately the house surgeon did not himself detect the fracture in the skiagraph and, without waiting for the radiologist's report, sent the patient home to bed on the Sunday. It was not till the Monday that the house surgeon saw the radiologist's report and had his attention directed to the evidence of the fracture. The patient's medical attendant, who had strongly suspected a fracture, was surprised to find that she had been sent home so soon; but she told him that no fracture had been detected and he naturally accepted this information as the result of the X ray examination. She died in considerable pain about ten days after the accident; she was feeble and had a very weak heart, and it was stated that the fracture would never have united. The coroner's questions elicited the fact that the house surgeon had authority to act upon his own interpretation of a photograph, and that, in the opinion of the radiologist, it was an easy matter for this fracture to remain undetected by anyone who was not "reading" films the whole time; there was practically no displacement. The hospital authorities gave an assurance that steps had been taken to prevent a recurrence of the failure to communicate the detection of a fracture. A verdict of "accidental death" was returned.

Cocaine Treatment of Asthma

In Rhodes *v.* Rowbotham the plaintiff unsuccessfully alleged that his doctor wrongfully and negligently treated his asthma with cocaine in such a manner as to make him a drug addict and to cause him serious illness. Mr. Rhodes, a clerk aged 26, said that during 1929 and 1930 he was treated by Dr. Rowbotham with adrenaline and other usual remedies for asthma. In June, 1933, he again consulted Dr. Rowbotham, and he now complained that for six weeks from that date his treatment included cocaine administered in dangerous quantities. According to the plantiff, Dr. Rowbotham during this period gave him a 10 per cent. solution of cocaine as a nasal spray on 18 or 19 occasions, filled an atomiser for him with cocaine solution on 11 occasions, and on 6 other occasions supplied him with cocaine solution in a little brown bottle which would hold about half an ounce. Dr. Rowbotham vigorously disputed these allegations except that he admitted spraying the plaintiff's nose with a cocaine solution on 6 occasions and supplying him with cocaine in the atomiser on 2 occasions. As will presently be seen, the judge preferred Dr. Rowbotham's version of the facts. The defendant counter-claimed for £22 7*s*. 6*d*. for professional fees, and the plaintiff replied that no fees were due since the professional services were useless.

Mr. Rhodes in the witness-box described his sensations under the cocaine treatment. He said the defendant had administered percaine as well as cocaine; he claimed to be able to distinguish the two as administered to him; cocaine had a bracing and exhilarating effect and dried up the nose very effectively; it had a bitter taste whereas percaine was more or less tasteless; cocaine tightened up the throat whereas percaine did not. This evidence was controverted by medical witnesses for the defence, and the judge came to the conclusion that no patient could thus distinguish with certainty between cocaine and percaine in a nasal spray. The significance of this point was its bearing on the accuracy of the plaintiff's statements as to the quantity and frequency of the cocaine treatment. In cross-examination, Mr. Rhodes said he was not now a drug addict; he was unable to say how long the addiction had lasted; he denied that he had confused cocaine with percaine. His craving for cocaine, he said, started on July 22nd, and coincided with a bad attack of asthma and what was for him a prolonged absence from cocaine. He was afterwards in a nursing-home for a month. The consequences of the defendant's treatment of him, he claimed, were that he became a chronic instead of a spasmodic asthmatic; his general health suffered considerably. Dr. Alexander Binning, who saw Mr. Rhodes on August 2nd, gave evidence that he then formed the opinion that he was a cocaine addict who should be sent at once to a nursing-home. In Dr. Binning's opinion cocaine, if administered in the quantities described by Mr. Rhodes, was highly dangerous and very likely to cause addiction; cocaine was bad as a regular treatment for asthma over a period; he did not agree that the cocaine spray was a common remedy for relief of asthma; he thought it a dangerous procedure. Dr. W. M. Capper, called by the plaintiff, stated that Mr. Rhodes attended at the out-patients' department at St. Bartholomew's Hospital on June 17th. 1933, and said that Dr.

Rowbotham had advised him to have a 20 per cent. cocaine spray; the witness eventually gave him a 2 per cent. spray. Dr. Capper said the usual strength of cocaine used in the throat department of the hospital was 4 per cent., but one surgeon did use a 10 per cent. solution.

Dr. Rowbotham described the condition and treatment of Mr. Rhodes. He denied that he had ever used a 20 per cent. solution; he always used one of 10 per cent. On one occasion, when he was going away, he filled Mr. Rhodes's spray with cocaine solution, warning him that the drug was not to be used indiscriminately but only for the relief of asthma; it was a very safe type of spray. Dr. Rowbotham described a visit to the patient on July 23rd, when the latter was suffering one of the worst asthma attacks he had ever seen: "I could not feel his pulse; his face was blue; he looked like a drowned man; nothing I knew would have done him any good except cocaine." He had often advised the patient to go into a nursing-home for a nasal operation. Mr. Bedford Russell, surgeon in charge of the throat department at St. Bartholomew's Hospital, gave evidence that Dr. Rowbotham's general line of treatment was perfectly sound; a strong solution of cocaine was used as a spray to prevent absorption; 10 per cent. was not an excessive strength. Dr. Thomas Beaton said he had never seen a case of an established cocaine addiction; he thought it quite impossible for Mr. Rhodes to have become an addict in four or five weeks. Dr. R. D. Gillespie, a member of the Advisory Committee of the Asthma Research Council, similarly said he would not have thought it possible for the plaintiff to become a cocaine addict from the treatment between June 16th and July 20th; he would certainly not have regarded him as cured in the few weeks during which he was in the nursing-home afterwards.

Mr. Justice Hilbery, in giving judgment, said the plaintiff had not discharged the task, which all plaintiffs undertake, of establishing his case. A charge of professional negligence involved establishing what, in Rich *v.* Pierpoint, Chief Justice Earle described as "a want of competent care and skill to such an extent as to lead to the bad result." Even accepting Mr. Rhodes's evidence fully, he thought it difficult for him to have absorbed in four weeks, by the use of the atomiser, enough cocaine from the trickle down the back of his throat to create an addiction. He was satisfied that Mr. Rhodes never became a drug addict; he was weak and ill, shattered by very severe asthma attacks and spasms, and the cocaine spray relieved the spasms; naturally he clamoured for the one thing which he knew would relieve him. The plaintiff had failed to show that he had suffered the alleged damage as the result of negligent treatment by the defendant. This was sufficient to decide the case, but the judge thought it unfair to Dr. Rowbotham not to give the conclusions he had formed on the points raised. These were entirely favourable to the defendant. The judge accepted Dr. Rowbotham's account of the number of times the cocaine spray had been used, "backed as it was by his clinical notes." He was satisfied that Dr. Rowbotham was not only a skilled, competent medical practitioner, but was also a witness who in the box was mindful of the obligation of accuracy and truth. The result was that the court was satisfied that Mr. Rhodes did not get excessive cocaine in the way he said he did. Judgment was given for Dr. Rowbotham on the claim and on the counter-claim.

While the appropriate strength of a cocaine solution for nasal sprays is not exactly a question for a court of law, the judge, after hearing expert evidence and certain passages from text-books which were read to the medical witnesses during cross-examination, observed in the course of his judgment that, according to the most modern research work, a 10 per cent. solution may be used for its restrictive action in preventing absorption into the system.

MEDICAL SOCIETY OF LONDON

ONE HUNDRED AND SIXTY-FIRST ANNIVERSARY DINNER

THE annual dinner of the Medical Society of London was held at Claridge's Hotel on Friday last, March 8th, the president of the society, Lord HORDER, in the chair. It had been announced that the Prime Minister would be present to propose the toast of the Medical Society of London, but on the injunction of his physician, the president of the society, he sent a message regretting inability to be present, and saying that he had asked Colonel John Buchan to take his place as a substitute, a suggestion which he felt sure would be acceptable.

After the loyal toasts, Lord HORDER explained the Prime Minister's absence as being due to a feverish cold and not to "a diplomatic disease," and proposed that a telegram of sympathy should be sent; he then introduced Colonel Buchan, C.H., a personal friend of the Prime Minister, as their chief guest that evening.

Colonel JOHN BUCHAN proposed the toast of the Medical Society of London in what he described as his celebrated impersonation of the Prime Minister. Honesty, he said, compelled him to confess that he knew nothing of medicine, and though he was deeply grateful for its services he was really saying the "Amen of the unlearned." But he held medicine to be one of the really worthy human undertakings because of the combination that was required in the doctor of action and thought. The doctor's hard life was repaid by the general esteem in which he was held, compared with the lot of the lawyer and of the politician, who were invariably considered proper subjects for journalistic shafts. Literature, he pointed out, had registered approval of doctors from the earliest days, since Homer described the doctor as "a man worth several men." Colonel Buchan, however, had one criticism to offer—he could not read medical books; he had the same objection to them as the American girl had to the Ten Commandments, of which she said that "they did not tell you what to do and only put nasty ideas into your head." He thought there would be an appreciative public for more biographies of medical men; he was not alluding to the lives of the Listers and such pre-eminent persons, but to men of less world-fame whose work none the less deserved record. In describing the position of the Medical Society of London, the oldest society in the city, he thought that a certain attitude of isolation which it had voluntarily assumed carried a profound moral, for, while he recognised the value of specialisation, he held that it should be accompanied with unity, a synoptic point of view being taken. In law this was obviously necessary, and even in politics the best results were obtained through the work of leaders able to take the comprehensive view, for thus the old and established truths were given more vigour. He congratulated the society on its comprehensive outlook and steady progress.

Lord HORDER said that before replying, his duty was to receive from Dr. E. P. Furber a thermometer used in his practice by their founder, Lettsom,

which had been presented to the society by one of Lettsom's descendants.

Dr. FURBER said that the owner of the thermometer, who was to have made the gift in person, was prevented from being present. The thermometer had previously belonged to his brother-in-law, and he detailed Lettsom's extraordinary pedigree. Lettsom's mother, he said, had six sets of dead male twins, she then had a seventh set—one was John Coakley Lettsom and the other was Edward Lettsom, a hydrocephalic epileptic imbecile, who lived for some years. Lettsom's youngest daughter Eliza married Dr. John Elliot and had 15 children. A great-great-grandson was Lieut.-Colonel William H. W. Elliot, D.S.O., I.M.S., who died in 1934, and whose widow presented Lettsom's thermometer to the Medical Society of London. Of the instrument, he said: "It is a small pocket thermometer with a Fahrenheit scale in an ivory box. On this is a gold plate with J. C. L. engraved on it; these characters denote the date to be 1780–1790. It is not a clinical thermometer such as we use and the employment of it by Lettsom is a matter of conjecture." The modern clinical thermometer, Dr. Furber pointed out, was not in use for another century, and he had been informed that such ivory boxes were used in the eighteenth century for holding toothpicks, and that in the lid was a looking-glass; and as something had obviously been removed from the lid of the box, it was possible that it had originally held a looking-glass.

Lord HORDER, in reply, referred to the priority of place held by the Medical Society of London, but reminded the company that it had a direct predecessor in a small body, the Society of Physicians in London, which owed its origin to the famous Fothergill, another Quaker, some years before their own body was founded by Lettsom. He said that it was his pleasant duty to record a story of progress as indicated by an increasing membership, while he added that at this particular dinner the attendance was the largest in the history of the society, save when the Prince of Wales consented to be their guest under the presidency of Lord Dawson. No one, he thought, who looked at the list of the presidents of the society and its annual orators, and recalled the names of those who had delivered the Lettsomian and Lloyd Roberts lectures, or who had received the Fothergillian medal of the society, would require further testimony as to the status of the society in the profession. He owned that he found the task of being president an easy one because the officials of the society did all the work, and concluded by thanking Colonel Buchan for so eloquently filling the breach, and reading a telegram from the Prime Minister conveying his good wishes to the company.

Mr. ERIC PEARCE GOULD proposed the toast of the guests, coupling with it the name of Dr. ROBERT HUTCHISON, president of the Royal Society of Medicine, whom he described as a pillar of clinical medicine, when Dr. Hutchison began an amusing speech by apologising for being present as a guest seeing that he had once been a fellow of the society. But he noted that they had two honorary fellows, one of whom was a Scotsman, and he thought that that Scotsman might be feeling lonely. In allusion to the fact that his own society, the Royal Society of Medicine, was an offshoot of the Medical Society of London he attributed the schism to the fact that there was a period in the history of the Medical Society of London when the president had been afflicted with astasia-abasia which resulted in an inability to vacate the presidential chair. The only way of avoiding his presidency was to found another society. He was glad of the opportunity thus given for a separation, as it had resulted in the Medical Society of London, through its comprehensive scope, being able to secure at its meetings valuable practical discussions.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE FOREIGN MEDICAL STUDENT

THE noisy street demonstrations of French medical students against the foreigner have now given place to a more dispassionate consideration of the whole problem, and some of the recent demonstrators have, perhaps, realised that it is rather foolish to cry before you are hurt. Prof. Hartmann, vice-president of the Academy of Medicine, and president of the Association pour le Développement des Relations Médicales entre la France et les Pays Etrangers, has just published figures which show exactly what the position is at present with regard to the foreign medical student and doctor. In 1930 medical State diplomas were awarded to 49 foreigners. The corresponding figures for the four following years were 55, 69, 78, and 125 respectively. This rapid rise was accounted for by Rumania alone, 97 of the 125 recipients of the State diploma in 1934 being Rumanians. The number of foreigners from other countries has risen only from 21 to 28 between 1930 and 1934. In April, 1933, the number of Rumanians who could take the State diploma in all the faculties was limited to 10. As for the number of foreigners who have acted as interns in the public hospitals of Paris in the period 1930–34 inclusive, it represents only 6·5 per cent. of the total—i.e., 30 foreigners among 460 interns. Of 5636 doctors practising in Paris and the Seine area, only 319 are foreigners. Prof. Hartmann reminds his countrymen that the stranger within the gates may bring blessings as well as burdens, and that when he returns home he is calculated to be an apt apostle of the French language and culture, as well as a useful customer in the matter of medical journals and books, surgical instruments, and pharmaceutical products.

B C G UP TO DATE

Dr. C. Guérin, whose association with B C G is indicated in its final letter, has lately summarised its progress[1] since Calmette's death. During the first ten months of last year 110,486 vaccinations and 13,909 revaccinations were effected—a daily average of 368 and 46 respectively. During the first ten months of 1934 the vaccinations numbered 136,544, and the revaccinations 20,819, the daily averages rising to 455 and 69. It will be seen that the rate of increase of the revaccinations is approximately double that of the vaccinations. At the present time every fifth child born in France is given B C G. Since the end of 1933 much progress has been made in the B C G treatment of children over the age of two years and of tuberculin-negative adults—progress which has been facilitated by the simplicity of the technique of vaccination by the mouth. In their consistent adherence to oral rather than parenteral vaccination, Calmette and his school may have erred from the strictly scientific point of view, but they have shown a shrewd sense of psychological values. It is claimed by Guérin that no serious sequel to B C G vaccination has been brought to his attention. He quotes Sotty's observations as showing that the

[1] Bull. de l'Acad. de Méd., 1935, cxiii., 58.

tuberculosis morbidity was eight times greater among the controls than among the children given B C G, both the controls and the B C G children being members of tuberculous families. It appears that 37 per cent. of the requests addressed to the Pasteur Institute for B C G are made by doctors, and 63 per cent. by midwives and tuberculosis dispensaries. B C G is still provided free of charge. Abroad, 52 laboratories in 34 different countries have been authorised to distribute B C G. As for its limitations and alleged failures, three deserve special mention. As in the case of all other infectious diseases, there is always a certain proportion of persons refractory to vaccination. The second cause of failure concerns the race between B C G and virulent tubercle bacilli. First come, first served; and it is essential that the child who is born in a tuberculous milieu should be isolated from it while it acquires the immunity which B C G confers. The third failure or difficulty concerns the ability of the tubercle bacillus to resist phagocytosis. Unlike most pathogenic germs, it is extraordinarily resistant to digestion in the tissues, whose dealings with it are of an expulsive rather than a destructive order. But expulsion is not always feasible, and when the subject of B C G vaccination is exposed to severe and prolonged superinfection by virulent bacilli, there may be an accumulation of them in the lymphatic tissues, with resultant tuberculous lesions which are not, as a rule, progressive.

At a recent meeting of the Société de Pédiatrie, Dr. Tixier protested against the propaganda at present conducted in favour of B C G, whose efficacy he considered doubtful, and whose dangers he believed were certain. The storm he raised on this occasion has induced the Pasteur Institute to appoint a commission of investigation composed of biologists and clinicians. This commission will be presided over by Prof. Marfan, its members being Drs. Debré, Weil-Hallé, Lereboullet, Nobécourt, Guérin, Bocquet, Nègre, Martin, and Ramon. It would be difficult to collect a body of men enjoying better reputations for scientific attainments and integrity in their respective fields. But it is a pity, when the Pasteur Institute's chief trump card is being scrutinised, that so many of the members of this commission should happen to be also members of the Institute and, in certain cases, directly associated with the genesis and subsequent sponsoring of B C G. The Gilbertian touch.

DUELLING IN FRANCE

At 10 A.M. on March 6th two Corsican members of the French Chamber of Deputies fought a duel with pistols at a range of thirty paces. The firing ceased with the wounding of one of the duellists in the right forearm. Apparently no bones were broken, but in the bulletin issued soon afterwards by Prof. Gosset and Prof. Lardennois, emphasis was laid on the abundance of the arterial hæmorrhage. The quantity and rate of loss of blood count, it would seem, in such matters of "honour." The association of distinguished Frenchmen with this political duel was not limited to the medical profession. Marcel Prévost of the French Academy is mentioned in the press as one of the duellists' seconds. Monsieur Herriot promptly called on the wounded duellist to inquire after his health, and the Radical-Socialist group in the Chamber of Deputies unanimously voted, a few hours after the duel, a message of sympathy with the patient. The medico-legal aspect of such a duel bristles with Gallic paradoxes. In theory, murder by duelling is just as illegal in France as any other form of murder; and the seconds and other parties to a duel are also liable to severe penalties, again in theory. A judicial inquiry into the circumstances of this duel has already been ordered, but it is easy to forecast its issue. In certain matters of "honour" the French are incorrigibly medieval, and the ethics of duelling in France must be mastered if the width and depth of the gulf separating Anglo-Saxon and Latin standards are to be appreciated. There are, to be sure, extenuating circumstances connected with the French duel of to-day. One of them is the laxity and complexity in practice of the laws dealing with libel and slander. It is notoriously safe to libel and slander your neighbour in France because, if he is familiar with French legal procedure, he will think twice before he brings an action against you. This sealing of the forensic safety-valve means that an insulted person is sorely tempted to settle his account with his adversary forthwith by plugging him with a bullet under conditions which will create sympathetic publicity, and are not likely to entail any very serious consequences; provided, of course, the issue of the duel is winging, not fatally wounding. Even in the latter case, the shadow of the guillotine is very faint. Murder by duelling is cold-blooded, not hot-blooded murder of the crime passionnel type, so titillating to the emotions of a French jury. But in duelling, the deliberate premeditation of its consequences is more than compensated for by the satisfaction of that sense of "honour" which has no exact counterpart in the Anglo-Saxon countries. Mark Twain and others have done their best to kill the French duel by ridicule. A section of the French public has followed their example. If they have failed, it is largely because in France you still rate your "honour" more highly than the other man's life. As long as this is the case, we may expect to find distinguished authors and surgeons, not to mention ex-Prime Ministers, only too pleased to be identified in some sphere, however peripheral, with the duellists.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

NATIONALISATION OF MEDICINE IN QUEENSLAND

THE medical problem in Queensland is largely a matter of long distances, sparse population, and a tropical and subtropical climate. As in Western Australia, special attention has been given to the development of aerial medical services; in both these States there are systems of aerial transport for the sick and a number of "flying doctors." Queensland, further, has developed a hospital system which is almost entirely governmental, and the hospitals are largely staffed by full-time men, some of whom are also allowed the right of private practice. There is every indication that this system is likely to grow, and except in privately owned institutions, such as church hospitals, the honorary staffing of hospitals is on the wane.

That political activities are causing considerable concern to medical men in Queensland may be surmised from the address given by a Queenslander, Dr. Duhig, to the congress of the Australian and New Zealand Association for the Advancement of Science, recently held in Melbourne. As reflecting the point of view of one who lives in a State where the political control of medicine has progressed probably further than in any part of the British Empire, his remarks are decidedly interesting.

"I want to point out," he said, "the dangers which threaten private medical practice. Nationalisation is one. The evils of such a system are obvious. There are more subtle dangers. They are the encroachments made by slow pressure of a fairly enlightened public opinion acting on a profession so preoccupied with immediate tasks, that it is blind to the drift of things. I refer to the provision of free or State-subsidised services, such as school inspection, maternal and child welfare, dental treatment, diphtheria immunisation, vaccination, psycho-analysis, nutrition, regulation of fertility and possibly many other things. All services of this kind could and should be part of a private practitioner service."

Dr. Duhig advocated the reorganisation of the medical profession on a political basis, and a national system of insurance which among other things would subsidise research and found schools of medicine. The hospital system he described as a "gigantic Frankenstein"; doctors had been dragged into it by the spurious prestige of honorary appointments.

CRISES IN NEW SOUTH WALES

In New South Wales, also, political pressure is becoming an unduly prominent feature, especially in regard to the public hospitals, which in return for the large government subsidies are unable even to contemplate any important action without ministerial sanction.

Owing largely to the activity of the Minister for Health and the Hospitals Commission, great development is taking place in the hospitals, especially in the provision of "intermediate" beds for paying patients. What will be the reaction on medical practice it is difficult to foresee; certainly the new schemes are viewed with alarm by the private hospitals. At some institutions beds in the intermediate blocks are reserved for the use of members of the honorary medical staff, while at others they are open to all medical practitioners. There seem to be many objections to the closed system, which is regarded with disfavour by many members of the profession. There are also other difficulties, such as the relation of the resident medical staff to the occupants of these beds, and the collection of fees, the legal position at present being that the hospital has priority of claim on all fees paid by the patient.

Throughout Australia there has been difficulty lately in obtaining and retaining enough resident medical officers for efficient working at some hospitals. At the moment the supply does not seem to equal the demand, and the trouble is accentuated by resident medical officers often leaving the larger hospitals to take up more lucrative posts elsewhere or to commence private practice. In New South Wales the Minister for Health, Mr. Weaver, threatened to amend the Medical Act so that medical men would not be permitted to practise in the State unless they had completed a full year as resident medical officer at a recognised hospital. It was pointed out to the Minister that if he did this, he would be preventing practice by men who have had six years' thorough training in medicine, while allowing practice without restraint by osteopaths and by quacks and charlatans who have had no training at all. Here the matter stood for the time being.

A serious situation also arose as a result of steps taken by the Minister to make it unlawful for any member of a hospital staff to be a member of the board of control of a hospital. These steps were necessitated, he said, by the greater use of public hospitals by paying patients and were taken on the advice of the crown law authorities, who regarded it as illegal for any person to be a member of the hospital board who has direct or indirect financial dealings with that hospital. Doctors were thus debarred from the boards, except in the case of certain hospitals which have special Acts. The decision aroused a storm of protest both from hospital boards and medical men. Exception was taken to some of the public utterances of the Minister on this matter, and also on his proposals concerning resident medical officers, in which he referred to men who started practice without post-graduate experience as "duds." The New South Wales branch of the British Medical Association advised medical men who desired to do so to stand for election to hospital boards and state their intention of testing the matter in court.

The dispute between Mr. Weaver and the profession ended on Feb. 11th in reconstruction of the State cabinet with the exclusion of the Minister. In his letter Mr. Weaver defined three issues on which, he presumed, the cabinet disagreed with him:

(1) The decision, on legal advice, that doctors who draw £20 or over in one year are not eligible to sit upon hospital boards;

(2) That doctors should be compelled to do a year's course in a hospital before being allowed to enter into private practice; and

(3) That storekeepers in country towns should not be allowed to sit on the board of a hospital if they trade with the hospital.

He adds: "When I tell the public what has been done by storekeepers, doctors and chemists, &c., there will be a public outcry against such methods being allowed to continue or that there should be any defence of such outrageous actions." The Premier, Mr. Stevens, in his reply, denied that any of the presumed points of issue were discussed by the cabinet, and accused Mr. Weaver of lack of coöperation with his colleagues. More is likely to be heard of this matter.

LOTTERIES, HOSPITALS, AND POLITICS

As I have previously mentioned in this column, legislation has for some time been contemplated to prevent the sale of shares in lottery tickets in New South Wales. This legislation has now been passed and has resulted in the closing of the numerous lottery shops which have sprung up. These shops sold for 1*s.* a one-seventh share in a lottery ticket worth 5*s.* 3*d.*; they conducted a lucrative business and widely advertised the good fortune which attended their clients. It was claimed that in this way the lottery lost £100,000 each year, but against this must be set the wide advertisement of the lottery by the shops and the ease of investment in it.

It would seem that in those States which have lotteries, the proceeds of which are applied to hospitals, the outstanding problem becomes one of government control. This is particularly evident in Queensland and in New South Wales.

REGULATION OF DENTISTRY

An Act has now been passed which must undoubtedly raise the status of the dental profession in New South Wales. Its definition of the practice of dentistry includes the mechanical construction, renewal, and repairing of artificial teeth, and it is hoped in this way to discourage illegal practice by dental mechanics. By a later clause these must receive their mechanical work from a registered dentist. Other important provisions of the Act are the abolition of advertising and of the apprenticeship system. It is laid down that entrance to the profession shall in future be through the University of Sydney, but those apprentices who prove their rights to the Dental Board will be allowed to qualify within five

years from now. The payment of an annual roll fee not exceeding £2 enables the Dental Board to establish a fund from which it may make grants for dental education and research, and the Act provides that the Board, for purposes of inquiry into professional misconduct, shall have the powers of a Royal Commission.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

RESEARCH ON BLINDNESS

Mr. William Henry Ross, chairman of the Distillers' Company, Ltd., has given the magnificent sum of £40,000 to establish in Edinburgh an organisation "with the object of investigating the origin and causes of blindness, and utilising the results of such investigation towards its prevention and cure." The income from the foundation is placed in the hands of trustees whose chairman is Dr. Arthur H. H. Sinclair, president of the Royal College of Surgeons of Edinburgh. The new foundation should enable Edinburgh to take a leading part in ophthalmological research, and it is particularly gratifying to know that Dr. Sinclair, who has brought so much credit to ophthalmology, is to be closely associated with its management.

RHEUMATIC HEART DISEASE

At a meeting of the Edinburgh Medico-Chirurgical Society last week Prof. W. T. Ritchie opened a discussion on rheumatic heart disease. He based his paper on a series of 244 cases admitted to his wards at the Royal Infirmary during a period of ten years. In considering the various views held concerning the nature of acute rheumatism, he referred especially to the possibility that allergy may account for many of its manifestations. The immediate prognosis in acute rheumatic carditis is usually favourable, but 5 per cent. of his cases ultimately developed fatal streptococcal endocarditis, and he believed that half or two-thirds of young subjects who contract acute rheumatism become cardiac cripples before the age of 50. The mortality statistics are not exact, but Carey Coombs estimated that in Great Britain 12,000 persons die of rheumatic heart disease in any one year, while 60,000 are disabled. In 1932 over half the 654 cases of heart disease admitted to Edinburgh Royal Infirmary were of rheumatic origin; on a given day last month there were 94 cases of rheumatic heart disease in the Edinburgh hospitals, and in four of the larger ones 1 in 8 of all the medical patients was suffering from this condition.

Prof. Ritchie finds that in acute rheumatism more benefit is derived from prolonged rest than from any other line of treatment. Complete recumbency may have to be advised for 6–12 months, but it is often difficult to enforce. As efforts to cure rheumatic heart disease are of little value, the importance of prevention cannot be over-emphasised. The disease in many ways resembles tuberculosis, and it seems vital that an organised attempt should be made to combat it. A physiological life must be regarded as the primary means of prevention.

Dr. John Eason reported good results obtained in the treatment of 37 acute cases of rheumatic fever with concentrated scarlatinal antitoxin (P., D. and Co.). After ascertaining that the patient is not sensitive to horse serum, he gives 30 c.cm. of the antitoxin intramuscularly and a similar dose 36 hours later. In febrile cases treated with antitoxin alone, the average interval between the first injection and a permanent return to normal temperature was 12·7 days. In 10 of these cases further injections were given before the temperature settled. One patient died suddenly three days after an additional injection given 26 days after the first dose; post-mortem examination showed no evidence of rheumatic heart disease and the long interval between the injections of the serum may have contributed to the fatal issue. A serum rash appeared in 32 cases, and a brief febrile reaction usually preceded the clinical improvement. Dr. Eason has also tried the effect of normal horse serum in a few cases and reports that some improvement followed its administration; but he did not think the results so satisfactory as those obtained with the scarlatinal antitoxin.

MILK FOR SCHOOL-CHILDREN

Nearly 400,000 school-children in Scotland are now being provided with a daily ration of milk. This admirable method of utilising the surplus milk of the Marketing Board may well prove to be of value in improving the health of the child. When the scheme is fully developed in Scotland over 4,000,000 gallons of milk will be utilised in this way each year.

IRELAND

(FROM OUR OWN CORRESPONDENT)

OVERCROWDING AT A MENTAL HOSPITAL

THE mental hospital at Grangegorman, Dublin, formerly known as the Richmond Asylum, is the public mental hospital, not only for the city of Dublin but for the counties of Dublin and Wicklow. From a report recently presented to the committees of management it is clear that not only is there grave overcrowding but that some of the premises are unsuitable. Of one division, which was formerly a prison, and now houses 100 patients, it is stated that it is badly ventilated, dark, and dreary. It has all the appearance and atmosphere of a penitentiary. Its complete demolition is advised. Dormitory and day-room accommodation for 145 patients is provided in wooden huts, and day-room accommodation for a further 200 patients, with all the workrooms and workshops, in similar structures. These huts have long outworn their usefulness and in them there is great risk of fire. At the auxiliary hospital at Portrane 300 patients are also housed in huts. The report goes on to state that the replacement of these dangerous structures is a question of extreme urgency. The resident medical superintendent reported that he had no accommodation to house any additional patients. The committee of management has long had under consideration the question of how best to obtain the necessary increase of accommodation. The more radical minds tend toward the establishment of a new institution, capable of accommodating 2000 patients, on a fresh site outside the city; others, as an alternative, suggest additional accommodation for 800 to 1000 patients partly at Grangegorman and partly on the grounds of the auxiliary hospital at Portrane. Either undertaking will cost a large sum of money, and it is intended to make application to the Hospitals Commission for a considerable grant from the Sweepstake Funds.

GIFT TO THE ROYAL CHEST HOSPITAL.—Lord Woolavington has sent £2500 to the Royal Chest Hospital, City-road, for the remodelling of the operating theatre and other structural alterations.

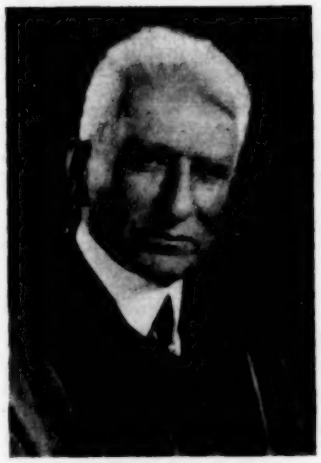
OBITUARY

FRANKLIN MARTIN, C.M.G., M.D., LL.D.

DIRECTOR-GENERAL AND LATE PRESIDENT, AMERICAN COLLEGE OF SURGEONS

IT is pathetic that within a few days of communicating to this paper on March 2nd an admirable statement on the position of osteopathy in the U.S.A., Dr. Franklin Martin, the Director-General of the American College of Surgeons, should have died. The event occurred at Phœnix, Arizona, in the seventy-eighth year of his age.

Franklin Martin's life was frankly and delightfully recorded in his own personal diary which was published some eighteen months ago under the title of "The Joy of Living" and was reviewed at the time in these columns. Martin, in this book, gave a detailed description of the childhood of a boy who was forced to keep himself by personal work on a Wisconsin farm before any definite scheme for his education had been evolved. His grandfather was a Canadian and his grandmother a native of Pennsylvania, and the two made a simultaneous track to the lake district of Wisconsin, passing on their way through Chicago, then only a squalid village. But a few years later Chicago had developed a medical school, and by the time Martin was old enough to adopt a professional career he could obtain there a comprehensive training. He graduated at the Chicago Medical College, which is now merged in the Northwestern University, and began immediately to take a prominent part in the development in many directions of medicine, surgery, and obstetrics in the city. Both as surgeon and gynæcologist he made his mark. He was gynæcologist to a large women's hospital and occupied the chair of obstetrics for a period at the Chicago Polyclinic, which was to be the origin of the post-graduate medical school of the city. He gained a large practice as a gynæcologist, while as a surgeon his name is associated in particular with an ingenious form of treatment to preserve or restore function in cases of extroverted bladder; he recently recalled the circumstances which had led him to be the first, or one of the first, surgeons to prove the possibility of transplanting the ureter into the intestine.



DR. FRANKLIN MARTIN

As a journalist Martin was widely known both in the States and in this country. Inspired by wide and well-directed reading and the opportunities given him by his numerous medical associations, he started in 1905 the well-known periodical *Surgery, Gynecology, and Obstetrics* in collaboration with some of the leading clinical authorities of the United States and this country. Under Martin's managing editorship, the journal became the official organ of the American College of Surgeons. He was connected also editorially with the *American Journal of Obstetrics and Gynecology* and in the management of both these journals he displayed his qualities as an organiser, and it was these which made him an important figure in general affairs in the U.S.A. when medicine was in question.

At the beginning of the century the work of Gorgas and Reed led to the eradication of yellow fever in Havana, and when Gorgas, Martin's close friend, died, it was proposed to found in Panama a memorial to him in the shape of an institute of tropical and preventive medicine. Martin became one of those in charge of the preliminary proceedings and one can read in his own autobiography that the labour of love was not a light one. In 1928, however, a promise of a permanent appropriation for the maintenance and operation of a Gorgas memorial laboratory was received from Congress, with the result that an annual sum of $50,000 is now received by the Gorgas memorial institute for the maintenance of the associated laboratory. Martin, with Colonel J. F. Siler, was authorised to make preliminary arrangements, the government of Panama lent valuable help, and finally the Gorgas Memorial Institute was founded with Franklin Martin as chairman of the directors and of the executive committee.

The American College of Surgeons was, again, a child of Martin's brain. The College was organised in 1913 at the instigation of an advisory committee, which had been appointed by the Clinical Congress of Surgeons of North America at its last meeting. On this committee J. B. Murphy, A. J. Ochsner, Charles Mayo, George Crile, and Franklin Martin were appointed to serve, and the details of carrying into effect the resolve to form a corporation, to be known as the American College of Surgeons, remained in the hands of Ochsner, Murphy, and Martin, the latter becoming chief executive officer. The College used the Royal College of Surgeons of England as a rough model for their institution and at the first convocation Sir Rickman Godlee, then president of the English College, delivered the inaugural address on receipt of an invitation from Martin who gave it in England personally.

In the following year the European war broke out, and much of the second volume of Martin's autobiography is composed of his experiences on the advisory commission of the American Council for National Defence. He was regularly present at the meetings of this commission, and later of the munitions board, the war industries board, and the general medical board, on each of which bodies he had a seat. And he kept a personal diary of the proceedings which he reinforced with the official minutes of meetings, committees, subcommittees, and full sessions as they became available. An autobiographical thread runs through the detailed descriptions of the work of others with whom the author had collaborated on these important bodies, and the whole forms a remarkable record of the expansion of medical activity in the U.S.A. in the face of the war, showing the difficulties which had to be faced, and the methods which were adopted to meet them. This section of Martin's autobiography displays well the man of thought and action that he was, and explains how thoroughly he earned his prominent position in medical circles. At the close of the war Martin received an honorary C.M.G.

Martin married in 1886 Isabelle Hollister, to whose cordial coöperation in his many activities he always paid eloquent testimony.

ELISHA HODKINSON MONKS, L.R.C.P. Edin.

THE death was reported at the end of February of Dr. Elisha Hodkinson Monks, who had been in practice in Wigan for 40 years. He was born at Wigan in 1860 and received his medical education at Owens College, Manchester, and Edinburgh, and after qualifying with the Scottish double diploma joined his father who was a medical practitioner in Wigan. He was appointed to the staff of the Wigan Infirmary in 1895, served his full time on the staff, was elected consulting surgeon, and continued to take a prominent share in the management of the institution, as vice-president, as trustee, and latterly as chairman of the board of management. He was surgeon to the Wigan borough police and to the local football club, and magistrate to the borough of Wigan, while for seven years he was chairman of the Wigan division of the B.M.A. He was also a prominent politician on the conservative side. As a citizen with long and important connexions with the town he will be deeply missed.

JOHN BRIERLEY HUGHES, M.B. Camb.

THE death of Dr. John Hughes occurred on Feb. 20th in tragic circumstances, for he died suddenly and quietly of cardiac failure while actually making a professional visit.

John Brierley Hughes was the son of a medical practitioner in Macclesfield and received his general education at the grammar school there. From there he proceeded in 1890 to Caius College, Cambridge, and graduated with honours in the Natural Science Tripos in 1893. From Caius he went for his clinical training to St. Bartholomew's Hospital, where he was taught by Butlin and Duckworth, and graduated in medicine at Cambridge in 1898. He returned to Macclesfield to join his father in practice and succeeded him in many of his professional appointments, while he developed a large private connexion, his all-round qualities as a practitioner being obvious to the public and to his colleagues. He discharged heavy public duties of a professional character, and for services during the war, at which period he was a superintendent of the auxiliary military hospital in the town, he was awarded the M.B.E.

JAMES McMURRAY, L.R.C.P. Edin.

James McMurray was born at Warren Point, County Down, and received his medical education at Queen's College, Galway, and Edinburgh, where he qualified in 1899. Just as he obtained a place on the Medical Register the South African war broke out and he joined up as a civil surgeon and remained on service for two years. Upon his return he practised for several years in Sheffield and in Bristol, finally coming to Walthamstow in 1908. During the war he served as a captain in the R.A.M.C. with the British Expeditionary Force, and for three years after the war was medical referee to the War Pensions Committee. He remained in practice in Walthamstow until his death, which occurred on Feb. 25th, after two days' illness of broncho-pneumonia.

DENTAL SURGERY AT LIVERPOOL.—At a recent meeting of the Dental Board of the United Kingdom it was resolved to offer the University of Liverpool a grant of £500 a year for a period of five years from Oct. 1st, 1935, towards the salaries of a full-time demonstrator in clinical and operative dental surgery and of a half-time demonstrator in orthodontics.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 2ND, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2573; diphtheria, 1637; enteric fever, 11; acute pneumonia (primary or influenzal), 1163; puerperal fever, 44; puerperal pyrexia, 107; cerebro-spinal fever, 16; acute poliomyelitis, 7; encephalitis lethargica, 8; continued fever, 1 (Guildford); dysentery, 11; ophthalmia neonatorum, 73. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 9th was 3885, which included: Small-pox, 0 under treatment, 0 under observation; scarlet fever, 1189; diphtheria, 1803; measles, 12; whooping-cough, 273; puerperal fever, 34 mothers (plus 11 babies); encephalitis lethargica, 268; poliomyelitis, 2. At St. Margaret's Hospital there were 15 babies (plus 2 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 18 (0) from measles, 5 (0) from scarlet fever, 20 (4) from whooping-cough, 44 (10) from diphtheria, 43 (12) from diarrhœa and enteritis under two years, and 83 (7) from influenza. The figures in parentheses are those for London itself.

Deaths attributed to influenza remain almost stationary, the total deaths for the last few weeks (working backwards) being 83, 91, 83, 91, 71, 56, 58, 59, 54. This week these deaths were distributed over 47 great towns, Liverpool and Birmingham each reporting 8, Cardiff 4, Manchester, Preston, and Swansea each 3. Liverpool reported 7 deaths from diphtheria, Sheffield 3. Four deaths from measles occurred at Wolverhampton and at Newport.

The number of stillbirths notified during the week was 332 (corresponding to a rate of 53 per 1000 total births), including 60 in London.

WEIL'S DISEASE IN THE ARGENTINE

THE first case of Weil's disease to be reported in the Argentine Republic has recently been described in detail, with a review of the literature and a bibliography of 174 references, by Dr. Henrique Barros, of Cordoba (Prensa med. Argent., Jan. 2nd, 9th, and 16th, 1935). His patient was a previously healthy woman, aged 22, who contracted the infection, like so many persons in Europe and particularly in Holland, while bathing in a swimming bath, which in this case was in the La Plata River, near Buenos Aires. Two days after the bath high fever developed with myalgia, subicterus, enlargement and tenderness of the liver, albuminuria, and frequent vomiting, with blood in the vomit and the stools. As the symptoms persisted and suggested the diagnosis of Weil's disease, a specimen of the blood-serum was sent to Prof. Schlossberger, of Berlin, who confirmed the diagnosis by finding marked agglutination of *Leptospira icterohæmorrhagiæ* with the serum in a dilution up to 1 : 100 and a fairly positive result in a dilution up to 1 : 700. Owing to the severity of the hæmophysis and the possibility of a gastric ulcer being present, gastrectomy was performed. Death took place 11 days after the operation and after four and a half months' illness. An autopsy was refused, but examination of the gastroduodenal segment removed at the operation showed superficial ulcers in the stomach and deeper lesions in the duodenum. While the paper was in the press Dr. Barros heard from Dr. E. Chiodi, of the National Bacteriological Institute at Buenos Aires, that spirochætes of the type of leptospira had been found in the rats at Buenos Aires, so that the possibility of the existence and dissemination of Weil's disease in that city must always be taken into consideration in cases of obscure fever. In conclusion, Dr. Barros remarks that spirochætosis icterohæmorrhagica, which was at first regarded as a rare disease, has every day become less so wherever it receives the attention which it deserves.

CORRESPONDENCE

TREATMENT OF TETANY

To the Editor of THE LANCET

SIR,—The leading article in your issue of Feb. 16th (p. 384) discusses the treatment of tetany with A.T.10 and the relationship of the latter substance to calciferol. Both preparations were used in the following instance.

A boy, age 13, was admitted to my ward last year with the diagnosis of tetany from congenital parathyroid deficiency. Since the age of 6 he had been liable to epileptiform fits, and also a year later to attacks of semiconsciousness with stertorous breathing. At 11 his vision began to fail with cataracts in each eye. Chvostek's facial sign was positive. The serum calcium was 5 mg. per 100 c.cm. and the plasma phosphates correspondingly raised to 8·9 mg. There were also some features of cretinism, with B.M.R. minus 26 per cent., but there was no evidence of rickets. Parathormone produced moderate improvement. Eventually, through the kindness of Prof. Holtz, the boy was given A.T.10 by the mouth, in large doses up to 5 c.cm. on alternate days. The serum calcium rose slowly but steadily, and all features of tetany vanished at a level of about 7 to 8 mg. calcium. The calcium rise was continued to 9·3 mg., but soon fell to 8·2 when A.T.10 was no longer given.

The Glaxo Laboratories were then so good as to supply a highly concentrated solution of calciferol, 14 mg. in 1 c.cm. of oil, to be taken with milk. Enormous doses were given, as much as 1,500,000 units of vitamin D in one day, the total dosage in 50 days amounting to 33½ million units or 840 mg. This may be gauged by the fact that 10,000 units daily is generally an excessive dose for a small child and that 5000 units daily will cure rickets. The boy showed no trace of ill-effects, though the serum calcium rose steadily in seven weeks to 12·2 while the phosphates fell to 3·7 mg. The calciferol treatment was then stopped. Basal metabolism was raised to normal by grs. 1½ of dry thyroid daily during the last month of calciferol treatment. Both cataracts were needled successfully.

The interest is not only in the tolerance to calciferol, but in the prolonged benefit. A fortnight after cessation of calciferol the serum calcium was normal, 9·3 mg.; and it remained at that level for the next three months without any further treatment. Epileptic fits and laryngismus have never recurred since the calcium deficiency was controlled. It would be of value to know the effect of very large doses of calciferol in other cases with tetany and whether so prolonged a benefit can often be obtained.

I am, Sir, yours faithfully,

T. R. ELLIOTT.

University College Hospital, W.C., March 6th.

THE OXYGEN TENT

To the Editor of THE LANCET

SIR,—I feel with Dr. Beaumont that in dealing with Dr. Poulton's oxygen tent your reviewer has rather implied that in this apparatus practical utility has been sacrificed to theoretical considerations. It would be, I think, a pity if such an impression were to get abroad. Clinicians are well aware that it is possible to have too much of a good thing, and that apparatus may be too cumbersome, too frightening, or too difficult to keep in order, to be of practical value; but a recent experience with Dr. Poulton's latest model, used in a case under my care at St. Mary's Hospital, convinces me that his tent is not of this category. A young girl with bilateral bronchiectasis, after the removal of a congenital collapsed lobe on one side, became critically ill with severe cyanosis. A physicist, through Dr. Poulton's good offices, arrived at hospital, set the tent going, and showed us how to carry on. The nurses quickly learned how to take the hourly readings of the oxygen within the tent, and for five days, until the girl was out of danger, oxygen therapy was maintained without any sort of hitch or difficulty. My surgical colleague and I were left not only deeply grateful to those who had so kindly supplied the help we needed, but greatly impressed by the ease and perfection with which the tent worked.

Surgical opinion seems strongly in favour of the use of an oxygen tent in certain post-operative conditions, and with Dr. Poulton's model, which has the great advantage of needing no motor attachment, there is indeed practically nothing that can go wrong, once it has been set properly to work.

I am, Sir, yours faithfully,

Harley-street, W., March 7th. REGINALD MILLER.

*** Dr. Poulton's bed tent was described by him in detail in THE LANCET of 1933, i., 244, and in the same issue was given an account of the clinical oxygen-measuring pipette which is an essential part of the outfit. The tent is now on view at the Medical Section, British Industries House, Marble Arch, where Mr. T. W. Adams, the physicist mentioned by Dr. Miller, is in attendance and prepared to explain its working.—ED. L.

THE PLACE OF SURGERY IN THE TREATMENT OF PEPTIC ULCER

To the Editor of THE LANCET

SIR,—One of the greatest changes that has come over the spirit of medicine in the last century is seen in the careful search for truth. Even as late as the early years of this century the dogmatic method of teaching still persisted. Statements were made in the name of some recognised authority and were therefore accepted as beyond question. This period was fortunately succeeded by a more healthy scepticism until it became the custom to accept no statement unless it were supported by definite evidence, the obtaining of which generally involved painstaking labour. That the latter spirit was one to be upheld in that it led to more certain and scientific knowledge was generally agreed, and it is probably because of such a spirit that so much advance has been made in recent years.

It was therefore with real regret that one saw an attempt to return to the former uncertain methods of dogma in Mr. Ogilvie's paper.[1] In one of his opening paragraphs he states that gastrectomy is the only operation for peptic ulceration, that gastrojejunostomy must go, that it cannot remain in the group of rational and successful operations, and that the failures of gastro-enterostomy meet us to-day wherever we go. For such statements, however, no shadow of proof is produced. We are left only with the feeling that Mr. Ogilvie says that it is so and therefore it must be so.

[1] THE LANCET, Feb. 23rd, 1935, p. 419; Brit. Med. Jour., March 9th, 1935, p. 457.

It is very deplorable to see such a spirit again introduced into medical publications when so many surgeons are meticulously and conscientiously working at so difficult a subject. That many surgeons hold views similar to those of Mr. Ogilvie is beyond question, but so far all of those who have supported these views have been most careful to bring forward the reasons of their belief and the evidence in its favour. There are still however a large number who hold quite opposite views, and since they also can bring forward strong arguments in support of their beliefs a fair statement of their case should be presented.

The adoption of one operation as a method for all gastric and duodenal lesions is being widely accepted on the European continent, but has had many opponents in this country and the United States of America. The chief reason advanced for the replacing of gastro-enterostomy by partial gastrectomy is the fear of subsequent gastrojejunal ulceration. Of the frequency of this complication there have been very divergent views, but the recent collective investigation of the Association of Surgeons, and other papers have done much to enhance the reputation of English surgery in striving to arrive at fair and honest conclusions concerning this difficult subject, and it is unfortunate that their value should be minimised and the conclusions arrived at set aside, and, indeed, not even considered, in statements such as are contained in Mr. Ogilvie's paper. One of Mr. Ogilvie's main arguments is that the longer cases of gastro-enterostomy are observed the greater is the incidence of gastrojejunal ulceration; and yet he states that it is the younger group of surgeons in England and America who are abandoning gastro-enterostomy. Surely such are not those who could have watched their after-results for the necessary prolonged period.

One can only speak with authority on one's own observations, and on several occasions I have published the results of the careful investigation of my own 2000 gastric operations. These figures have now increased to over 2500. In my publications and addresses I have always laid stress upon the fact that my patients have been most carefully followed in a follow-up department which was instituted in 1919. In my last address I brought forward strong evidence to show that probably not one single case of gastro-jejunal ulceration had been overlooked and invited any members of my audience to see the working of this department. I am pleased to say that several surgeons were sufficiently interested to accept this invitation. The results of these investigations showed that gastro-enterostomy performed for duodenal ulceration was followed by an operative mortality which was not greater than 1 per cent., and the incidence of gastrojejunal ulceration in cases which had been watched for a minimum period of ten years was only 3·9 per cent. This estimate or the frequency of the complication has been confirmed by Balfour who probably has had the widest experience of gastric surgery in the United States of America. Sherren, who probably performed gastro-enterostomy more frequently than any other surgeon in England, and who carefully followed his cases, was of the same opinion. Since his retirement his patients might have returned to the London Hospital without going back to their own surgeon. We have seen a few such cases, but most assuredly his failures do not "meet us wherever we go." Mr. Ogilvie, however, sweeps aside the conclusions of all investigators which do not support his views with the simple statement that the failures did not return to their own surgeon. That I have knowledge of my own failures—and, alas, they are too frequent—I am certain, but I still feel strongly that the routine replacing of an operation with a mortality of less than 1 per cent. and an incidence of gastro-jejunal ulceration of 3·9 per cent. by an operation which even in the hands of the most skilled continental surgeons still carries a mortality of 6 per cent., which does not entirely free the patient from the risk of subsequent gastrojejunal ulceration, and is followed by a very real risk of severe anæmia, is neither sense nor scientific surgery. That the performance of gastro-enterostomy in unsuitable cases increases the failures is certain, but it would surely be wiser to teach when and how a gastro-enterostomy should be performed and to reserve partial gastrectomy for selected cases and for those patients who later develop gastro-jejunal ulceration, for the majority of such ulcers can be entirely cured by a subsequent gastrectomy. It would simplify gastric surgery to feel that there was one operation for all gastric lesions, but it still remains true that the chief lesson a surgeon has to learn is not how to perform an operation but when to perform it, and such a lesson can only be learned by prolonged and painstaking investigation and research. Two thousand three hundred years ago Hippocrates stated that "experience is fallacious," and it will ever remain so if it is only based upon dogmatic opinions unsupported by evidence.

I am, Sir, yours faithfully,

Harley-street, W., March 11th. A. JAMES WALTON.

THE NATIVE'S DOCTOR

To the Editor of THE LANCET

SIR,—I have just read the leading article under this heading in your issue of July 21st, 1934. Your readers may be interested to know that a medical school for Fijians was started in Suva in 1886, and in 1928 was reorganised to include the qualification as "native medical practitioners" of students selected by their respective Governments from most of the island groups in the southwestern Pacific. Last year 39 students were resident, their races being as follows:—

Western Samoans	4	Solomon Islanders	2
Tongans	4	Eastern Samoans	1
Cook Islanders	1	Fijians	18
Gilbert Islanders	2	Rotumans	3
Ellis Islanders	2	Indians (Fiji)	2

The course of study lasts four years with annual examinations and the curriculum is modelled on that of the English medical schools. On qualification the natives return to their own countries where they are appointed to Government posts. Post-graduate courses are arranged. A thriving periodical, the *N.M.P. Journal*, is contributed to mainly by these N.M.P.'s in their various island groups.

In Fiji the native practitioners are mostly under the direct supervision of district medical officers, but a number are so isolated that perhaps only quarterly visits of European doctors are possible. In a colony such as Fiji, with its 80 inhabited islands, our system of training natives is not only invaluable but also an economic necessity. While our land area does not equal that of Wales, the group is spread over ten times that area. But the good results we obtain suggest that a method which has been a necessity to us might be a real advantage to more consolidated colonies. I am indebted to the chief medical officer, Fiji, for permission to submit the above facts.

I am, Sir, yours faithfully,

G. BARNES,

Savusavu, Fiji Islands, Dec. 19th, 1934. D.M.O., Fiji.

WHAT IS MALNUTRITION?

To the Editor of THE LANCET

SIR,—Your leading article of Feb. 16th with this title is timely indeed. It is such a relief to find that mathematical indices and formulæ have no place therein. There has been so much uninformed writing in the past which has only obscured the issue, and those who have followed these mathematical standards have missed many of the most marked cases of malnutrition. Much of malnutrition, as you so rightly point out, is not due to shortage of food but to wrong feeding. How often one has seen the active, wiry youngster, particularly about 10 years of age, put down as malnourished because, measured by the standard laid down by one writer, its ribs were obvious. Active; glossy, elastic skinned; glossy haired; with mucous membranes of good colour, true with every bit of fat run off in its activities, but in perfect health, these children are as far removed from malnutrition as the poles asunder. On the other hand, the big bloated, carbohydrate, surfeited child with its ribs invisible, but dull, lack-lustre skin and hair, and pallid mucous membranes, often with a lack of appetite which deludes the ignorant into the idea that the child cannot want food, is suffering from severe malnutrition. Malnutrition is a syndrome which those who know rarely mistake. It is true that in the pre-war days there was an added item which helped in the case of girls—viz., the character of the hair. This, owing to the habit of bobbing, and the greater care necessitated thereby, has definitely diminished the character of this contribution to the syndrome.

In dealing with children in school there are two opinions which often do not coincide: that of the medical officer and that of the teacher. Just after the war, when attached to the headquarter staff of the L.C.C., I got a far-seeing head teacher in a boys' school in a poor area to help me in an investigation. I got him to go right through the school and put down all the boys he thought were suffering from malnutrition. Afterwards I went right through the school and put down those I considered were suffering from malnutrition. We had a central block where we agreed. The head teacher had a block at one end that he thought were malnourished, and I did not. I had a block at the other end that I considered malnourished, and he did not. The ones he considered malnourished and I did not appeared to be cases where the head teacher, knowing the family circumstances, thought that they ought to be.

There is another mistake that is frequently made in some of these cases in mistaking pallor for anæmia. There is a certain type of child whose face is habitually pale, but its mucous membranes are good. There is another that gets a temporary pallor when confronted with an examining medical officer. Conversely there is the child who gets a temporary flush in the presence of the examining medical officer, and is as a result as highly placed as the former pallid child is lowly placed by the inexpert. It is well not to make assessment in appearance without seeing the children in a group later, when their appearance may entirely belie the original estimate. How well I remember the fury of one of our ablest sclfool medical officers in the country, as the result of a notice with regard to his daughter, who had won a scholarship at a famous secondary school, where she had been examined by a junior medical officer, to the effect that she was suffering from anæmia—she being one of the pallor cases referred to.

Eight years ago I called attention to the importance of the clinical syndrome as compared with mathematical methods. It is good indeed to see that at last there is to be an investigation based on clinical experience. There is also occasionally a class of case which it is true does not conform to type, in that viewed above the collar the primary impression is one of malnutrition, which is negatived by the condition of the child when stripped. Again there is a class of case which needs further investigation, in that all the circumstances are favourable, and yet without any previous history of gross illness there is some imbalance, possibly endocrine, which is manifesting itself as malnutrition. Sherman is abundantly right in insisting on the failure to convert money into the proper diet. This has been evident for long to those of us who know the homes internally.

Thanks to the Carnegie Trustees I am being enabled, as a result of a grant of £500, supplemented by my borough council, to carry out investigations to assist in the acquisition of more knowledge as to how money can be transformed into nutrition.

In conclusion, let me quote from an old record of eight years ago. At a tea given in one of our schools I picked out 13 children sitting at table, who, in my opinion, were suffering from malnutrition. In 12 of the cases either the father was dead or had been out of work for six months, and in the 13th case I had no time to go into the question of dietetic error. Surely a syndrome accurate to this extent is an obvious clinical entity, as obvious as myxœdema, but, it must be admitted, as elusive in lesser cases as early myxœdema. How often one has seen in the past, families living side by side on the same wage and under practically identical conditions, in which the following contrast occurs. In the one case the man has married a woman who has been in domestic service in a professional man's family where she obtained years of experience in utilising up everything in the way of food that was left over, and in practising economy, an economy unknown to many of those with much smaller incomes, but whose children are nutritionally satisfactory: Whereas in contrast to this is the housewife next door whose feckless habits in the matter of food are evidenced by the malnutrition of her children.—I am, Sir, yours faithfully,

ELWIN H. T. NASH,
M.O.H. and S.M.O., Borough of Heston and Isleworth.

March 12th.

PROSTIGMIN AND THE CHEMIST

To the Editor of THE LANCET

SIR,—Considerable stir has been created both in medical and lay circles by the publication of the results obtained in myasthenia gravis, but practically nothing has been said about the actual drug which has rendered this remarkable achievement possible. If you will accept a letter from a non-medical contributor I should like to submit that without the work of the research chemist this medical discovery would not have been possible. Prostigmin does not exist in nature. It is a substance created in the laboratory, and came about in the following way.

A young Englishman, a graduate of Cambridge, working in the central "Roche" research laboratories, prepared synthetically over 40 different substances having a molecular structure similar to that of physostigmine, with the object of finding a drug which would possess the peristalsis-inducing properties of physostigmine, but be free from, or at least exhibit to a lesser degree, the unwanted miotic action and the effect which physostigmine produces upon the heart and circulation. Of these substances, one—viz., dimethyl-carbamic ester of 3-hydroxyphenyl-

trimethylammonium-methyl-sulphate—was found to be very suitable for the purpose, and was submitted for examination to the Therapeutic Trials Committee of the Medical Research Council. A report of the findings of this committee appeared a year ago in your columns (1934, i., 942), and the substance has since been issued to the medical profession by the Hoffmann-La Roche Chemical Works in London under the name of prostigmin.

The spade work done in the laboratory which has rendered possible this successful treatment of myasthenia, and which apparently opens up considerable possibilities for further development in what may be styled submyasthenic conditions, should be known and recognised. The research work necessitated by such an exhaustive examination as that undertaken in the production of prostigmin is exceedingly costly and can only be carried out in laboratories equipped with the latest and most expensive apparatus, and by scientists of the highest standing and experience.

Thousands of new drugs may be synthesised and pharmacologically tested, but only a few of them come into general use, and credit is due to those enterprising manufacturing firms who voluntarily render such research work possible and thereby place in the hands of the medical profession new drugs and better remedies for the alleviation of disease.—I am, Sir, yours faithfully,

L. BAYLEY, F.C.S.

The Crescent, Friern Barnet, N., March 11th.

QUININE AS A PROPHYLACTIC IN MALARIA

To the Editor of THE LANCET

SIR,—Dr. Lyndhurst Duke, in his letter published in your last issue, asks for an authoritative pronouncement on the above subject. Such a pronouncement was given by the Malaria Commission of the League of Nations in their third general report entitled "The Therapeutics of Malaria" which was published in the *Quarterly Bulletin* of the League's Health Organisation in June, 1933, and was reviewed on page 246 of your issue of July 29th of the same year. The pronouncement, which was based on "field trials" as well as on "controlled laboratory experiments," will be found under the heading "The problem of clinical prophylaxis" on pages 203 to 207 of the report, and under the heading, "Summary," in paragraph (6) on page 234.

I am, Sir, yours faithfully,

London, March 12th. S. P. JAMES.

*** The issue of the *Quarterly Bulletin*, to which Colonel James refers, is now out of print, but the relevant sections are reprinted on p. 657 of our present issue.—ED. L.

HEREDITY AND MENTAL DEFECT

To the Editor of THE LANCET

SIR,—Dr. Findlay's article in your last issue giving an analysis of a group of cases of mental defect was of considerable interest, especially as his group is composed of individuals from the better social class, regarding whom there has been previously, so far as I know, no similar record. I think, however, that the sweeping character of one of his conclusions is scarcely justified by his results. "The analysis," he says, "lends little support to the idea that heredity plays any important rôle in the causation of mental defect." Dr. Findlay makes it a point of criticism of the work of the Departmental Committee on Sterilisation that they combine in one group for analysis both high- and low-grade defectives, but his own attempt to make a conclusion based on an examination of low-grade defectives apply to all, both high and low, is equally open to criticism and is the more surprising in that in an earlier part of the article he states that high-grade deficiency "may show, and as a matter of fact does show, a strong hereditary tendency." His further statement that "mentally defective parents seldom have mentally defective children" is surely contradicted by the Departmental Committee's finding that 16·9 per cent. of children between 7 and 13 years of age born from at least one defective parent were defective and 32·4 per cent. of children over 13.

Dr. Findlay makes reference to my own chapter on mental defect in Blacker's "The Chances of Morbid Inheritance." The cases included in my own pedigrees quoted in that chapter were all of children whose I.Q. was over 50 and none of the parents included could be classed as imbeciles, but to say that they were of high-grade would be to flatter them, unless we are to hold that any person with an I.Q. over 50 is high-grade. One feels, I think, in many discussions and many of the public inquiries into this subject that there is in general use no definite standard of what is meant by the terms high- and low-grade. Here the point of view of the hospital and institutional medical officer is very different from that of, for example, the school medical officer. To the latter, a case can appear to be low-grade which to the former is high-grade. Dr. Findlay states that his cases were low-grade, but it would certainly have been helpful could one have had a statement of their I.Q. This does not mean that the I.Q. should be regarded as the only diagnostic point, but it is convenient for grouping and statistical purposes.

It does not seem completely satisfactory to divide defectives simply into high-grades and low-grades. Is it not better to adopt Lewis's suggestion that a certain number of defectives, the larger proportion indeed, are merely biological variations on an intelligence scale? A separate group is constituted by defectives who, besides their defect, show pathological physical signs. Two-thirds of Dr. Findlay's cases seem to have been of this latter class in which the environmental factor has always been recognised as playing the larger part, although, as Dr. Findlay's figures show, heredity is also a factor to a small degree. To the former class, his remark that "intelligence as such is hereditary" surely applies and is in contradiction to his conclusion, although no one will deny that even in this group the factor of environment may play no inconsiderable part.

I am, Sir, yours faithfully,

Manchester, March 12th. HENRY HERD.

THE PURGATIVE ACTION OF MAGNESIUM SALTS

To the Editor of THE LANCET

SIR,—With regard to the recent controversy relating to the mode of action of magnesium sulphate in causing purgation, may I point out that intravenous injection of amounts of this drug up to one gramme have no constant effect on the frequency of evacuation or on the liquidity of the motions. The absence of effect has no relation to the strength of the solution injected, as isotonic and hypertonic solutions are equally without purgative effect.

I am, Sir, yours faithfully,

London, W., March 11th. H. A. DUNLOP.

PANEL AND CONTRACT PRACTICE

Medical Relief for the Poor

APPROVAL has been given by the Minister of Health to a new scheme for giving medical attendance in Warrington by the public assistance committee. Whereas in the past there have been two district medical officers there is now to be a panel of about 20 medical practitioners to do this work. Before giving approval the Ministry intimated that it was desirable that the two district medical officers should be agreeable to the inauguration of this scheme and willing to resign their appointments. They have expressed their willingness and have resigned, and the scheme is now working and approved for two years. The change will enable poor people to receive the medical assistance they require at the hands of their own doctor. This will relieve the district officers of work for which they have been inadequately paid—there have been applications from them for increased salary in keeping with the extra work they had been doing, but without result. If they are among the 20 doctors doing this work they should obtain the greater part of the work amongst those who have been under district officers' care in the past, for patients do not like changing doctors if they are satisfied. The Warrington officers are to be congratulated on having taken so broad-minded a view of the situation. A similar scheme in Wallsend has been held up because the district medical officers are reported not to be in favour of the panel system. It is thought that some compensation should be awarded to doctors who lose financially through action taken for the public good; and the cost should not be great.

Recognition of Partnership

At its last meeting the London Insurance Committee refused to recognise for insurance purposes a proposed partnership between two brothers living on opposite sides of the river. The facts of the case are that Dr. A has, with the consent of the committee, since 1931 employed his brother, Dr. B, as assistant. Dr. B has now purchased a practice on the other side of the Thames, the distance between the two addresses being stated to be about six miles, and it is desired that a partnership between the two brothers shall be recognised as from Jan. 1st, 1935. Dr. A has on his list more insured persons than he is permitted to look after single-handed; he requires a partner or assistant to help him. Dr. B has for some time been working mostly in the new area, taking little part in his brother's practice. The object of the suggested partnership is frankly to enable Dr. A to retain more than 2500 insured persons on his list. According to the terms of service treatment may be given at any time by a partner of the doctor on whose list the patient is, and the patient cannot demand the services of his chosen doctor; if an assistant is treating the case the services of the principal can be demanded. The committee insists that a partnership must be one in fact; the mere existence of a partner six miles away cannot be regarded as sufficient reason for allowing Dr. A to include in his list more insured persons than would be allowed him if practising single-handed. The demands of his own practice on Dr. B make it unlikely that he can go to the assistance of Dr. A any more than if he lived (say) at Newcastle. On the reading of the situation the insurance committee seems to be quite right; but whether they have any power under the regulations to refuse to recognise such a partnership is another matter. Under the terms of service an insured person must choose an individual doctor; he cannot choose a partnership. In the present instance he can choose his practitioner. The brother on whose list the patient is accepted is responsible for that patient's treatment and if any complaint arose he would have himself to answer that complaint; here again there seems to be no infringement of the regulations. The only definite stipulation is financial. The would-be partner must be in the position of a principal in connexion with the practice and entitled to a share of the partnership profits which is not less than one-third (in Scotland one-half) the share of any other partner. This information is not given in the committee's report, but it is hardly conceivable that the proposal does not comply with the stipulation. The rest is stated thus in Harris and Sack's "Medical Insurance Practice":

> "... the terms of the partnership agreement are not in themselves matters of which the Insurance Committee will necessarily take cognisance beyond satisfying themselves that the arrangement constitutes a real partnership. The duties of a partner, as of any single-handed doctor, are, as regards his insurance practice, defined solely by his Terms of Service with the Insurance Committee, and the existence or the provisions of a partnership agreement can in no case affect any partner's personal responsibility for carrying out those Terms."

But as two men in partnership may have between them 5000 insured persons, it is obvious that the regulations should prevent the possibility of (say) a Newcastle-London partnership, when the man in London could have (say) 4999 patients and the Newcastle man one only. Such a partnership should be disallowed simply and solely for the reason that the distance involved and the time taken for one partner to help the other would make such help impracticable. It would appear therefore desirable that, as in partnership or assistant agreements, where there is a restricting mileage clause, inside which a retiring partner or assistant may not practise for a number of years, so in the case of partnership agreements, which desire to be recognised by insurance committees, there should be some distance (which will vary in different areas) between the residences of the partners beyond which an agreement for partnership would not be permissible. But it appears very doubtful whether the decision af the committee in this case can be enforced legally under the wording of the present regulations.

Temporary Residents

Possibly the hot summer of 1934 caused more insured persons to travel about than in previous years, but the statistics of temporary residents for 1934 show that in those areas where the committee's figures are deductions from the area pool—that is, where more temporary residents go away from that area than come to it—such deductions have this year gone up, for example per 10,000 insured persons

London pays out for		56	against	52	last year
Newcastle ,,	,,	37	,,	29	,,
East Ham ,,	,,	24	,,	22	,,
Hull ,,	,,	22	,,	18	,,
Liverpool ,,	,,	22	,,	19	,,

The same indication of movement is shown in the figures for areas with additions to their areal pool—that is, where more temporary residents come to live in the area than are sent away from it, e.g., seaside resorts—for nearly all additions are increased. The

total figures per 10,000 of insured persons for whom additional payment is made to the areal pool are :—

Southport receives payment	for	246	against	237	last year
Blackpool	,,	506	,,	498	,,
Hastings	,,	285	,,	272	,,
Great Yarmouth	,,	337	,,	257	,,
Isle of Wight	,,	214	,,	183	,,

In this connexion it should be pointed out that there are still many local distribution schemes working with the sanction of the local panel committee under which more money is paid out to a doctor for treating a temporary resident than his insurance committee receives from the central pool for that purpose. For some few years now the distribution committee has fixed the sum of 8*s*. as the payment for treating a temporary resident and the sum of 1*s*. for the treatment of temporary residents in a convalescent home. If under the local distribution scheme a doctor receives six units for treating an ordinary temporary resident that is approximately 12*s*. The difference (4*s*.) which he receives comes out of the local practitioners' pool.

Panel committees would therefore be well advised to look into their local distribution schemes, and with the concurrence of the insurance committee correct the local scheme where necessary so that only the sum of money received from the central pool for temporary resident work and no more is distributed to the doctors who are actually doing the temporary resident work.

Medicine in Barrow

It was reported at the last meeting of the Barrow insurance committee that whilst the amount set apart for the provision of drugs was 2*s*. 9¾*d*. per insured person the sum actually spent was 4*s*. 1*d*. Where there are differences of this kind it would be obviously worth while to make a scrutiny of the prescriptions and so find out what accounts for the abnormal cost of drugs in the locality. Oxford is reputed to have the lowest drug cost, being only 1*s*. 10*d*. per insured person, but there are many others under 2*s*. The total mounts up quickly ; in Barrow, for instance, the prescribing costs £1600 more than is allowed for by actuarial calculation. The same kind of costly prescribing occurred in Lancashire a little time ago in areas where payment used to be made to practitioners on the attendance basis. An investigation was to be conducted by the local insurance committee, but the result has not so far as we know been published.

The Count of the Register

Each insurance committee makes a quarterly count of the number of insured persons on its register. In this way movements of the insured population can be discovered. As quarterly cheques (in advance) to insurance committees for 1935 are paid usually on the figure for the last quarter of the year (1934), this quarterly count does affect the cheques the doctor receives at the beginning of the quarter. The final settlement for the year 1935 is made when the total actual figures for 1935 have been received ; care has to be taken not to pay out to a committee in advance more than it is found later to be entitled to receive. An examination of the figures shows that in 39 counties, including Kent, Middlesex, Essex, and Surrey, and in 32 county boroughs, including Brighton, Croydon, Coventry, and Southend-on-Sea, the count is still going up. In 11 counties, including London, Durham, Lancashire, N. and W. Yorkshire, Derbyshire, and in 46 boroughs, including Leeds, Sheffield, Manchester, and Newcastle, the count is still going down.

PARLIAMENTARY INTELLIGENCE

OSTEOPATHS' BILL

Select Committee Inquiry

(*Continued from p. 588*)

THE Select Committee of the House of Lords, to which has been referred the Registration and Regulation of Osteopaths Bill, resumed consideration of the Bill on Friday, March 8th. Lord AMULREE was in the chair.

At the outset Mr. H. BEVEREDGE informed the Committee that he and Mr. T. M. COOPER, K.C., had been instructed to appear on behalf of the following applicants against the Bill :

The Royal Faculty of Physicians and Surgeons of Glasgow ; the Royal College of Physicians of Edinburgh ; the Royal College of Surgeons of Edinburgh ; and the Universities of Glasgow, Edinburgh, St. Andrew's, and Aberdeen.

Mr. MAURICE FITZGERALD, who is appearing on behalf of the Chartered Society of Massage and Medical Gymnastics, said that since the last meeting of the Committee he had consulted his clients as to the effect of the amendments which had been proposed in the Bill. If those amendments meant what he thought they meant, and if they were to be incorporated in the Bill, if passed, he thought that he would not need to trouble their Lordships with arguments in support of his clients' case or to call witnesses. Lord ELIBANK having said that, as the sponsor of the Bill and speaking in his personal capacity, he was prepared to accept the amendments if the Committee finally decided that that was the right thing to do, Mr. FITZGERALD said he did not think he would trouble the Committee further by his presence.

Two Questions to Mr. Streeter

Before the cross-examination of Mr. W. A. Streeter (the first witness for the promoters) was proceeded with, Lord ELIBANK asked the witness two questions. He said that at the previous sitting of the Committee Mr. Streeter was asked questions with regard to the length of the curriculum undergone by osteopathic students. Special reference was made to the second schedule to the Bill which provided for what was called four years' training, and criticism had been directed to the fact that osteopaths under this Bill would only have four years' training as compared with the five years' training undergone by medical students. He wished to know whether Mr. Streeter, speaking on behalf of the osteopathic associations, still saw some objection to the curriculum being extended to five years.

Mr. STREETER : Personally I am in favour of such an extension, and I am sure that my colleagues on the Osteopathic Legislation Committee would agree in that respect.

Answering further questions by Lord Elibank, Mr. Streeter said that he could not speak definitely for the osteopathic associations on this point, but he was reasonably sure that they would not offer any objection to a longer curriculum. Of course there would have to be some provision made for the students in the British School of Osteopathy who had already enrolled for the four years' course.

Lord ELIBANK then put his second question to Mr. Streeter. He said that the Bill had been amended to enable one person, being a registered medical

practitioner, to be appointed by the General Medical Council to sit on the Board which would regulate the osteopathic profession. He wished to know whether Mr. Streeter would object to two medical practitioners being appointed to that Board instead of one.

Mr. STREETER: I welcome that suggestion also.

Mr. Streeter Cross-examined

Sir WILLIAM JOWITT (for the British Medical Association) then cross-examined Mr. Streeter, who admitted that he did not know that it was legally permissible for an unregistered person to give an anæsthetic. Sir William Jowitt said that the point he wished to bring out was that under English law, subject to a very limited class of exception, anybody could practise the healing art so long as he did not pretend to be what he was not—a qualified man. Another provision of the Medical Act was this, that after a man had passed his degrees there must be no heresy-hunting, and he was allowed to practise in any way that he thought proper.—The witness said that was not so in the case of Dr. Axham.

Later, counsel suggested that if this Bill passed, 175 properly qualified osteopaths would be for the first time limited by the law as to what they might do, whereas over 2000 persons who were not qualified would not be so limited. If the Bill became law there would, for the first time, be a class of persons who were prevented from practising to the full extent the healing art. To which the witness replied, "That is not our business," adding that he thought it was in the public interest that those who were qualified should be on a register so that the public might know who were qualified.

Replying to further questions by Counsel as to the sphere of activities which osteopaths sought to be allowed to cover, the witness said that with the exception of major surgery, the right to give anæsthetics and the practice of midwifery, he thought they desired to cover the whole medical sphere. But he would not regard it as full privileges with those limitations.

The idea that osteopaths concern themselves with mere manipulative surgery is a complete misapprehension?—Absolutely.

Many of your colleagues are highly skilled manipulators, but you would not be content to have a register confined to manipulators under some medical control so that persons might be sent to you in proper cases for manipulation?—No.

So that the Committee must understand quite plainly that your claim has nothing to do with manipulation. It is a claim to treat every disease to which the body is subject?—We may be manipulators, but we do not think that the medical profession has a right to say whether we should treat a disease or not.

Replying to further questions by Sir W. Jowitt, the witness said that theoretically osteopathy was applicable to all illness. He realised that because of that there was opposition to his claim.

Although you claim the right to treat every disease as a physician, you are not claiming the right to sign a death certificate?—Not in this Bill. It never was intended that a person should have the right to sign a death certificate until such time as we are able to establish our schools, and lay down our curriculum.

The witness agreed that it was futile to begin any sort of treatment unless they first diagnosed what a patient was suffering from; but he added that diagnosis was not the whole basis; it was not the begin-all and end-all of everything. Sir W. Jowitt put it that, to treat a case objectively, a physician must be a man trained in diagnosis, in order to ascertain what a patient was suffering from; and, being that, why should he not be able to say what the patient died from?—The witness said he thought he should. He agreed that logically, if Sir W. Jowitt's claim was right, one must say that one ought to have the right to sign death certificates, but that was not their main object in the Bill. Their main object was to enable them to work with orthodox practitioners. They were not trying to compete with them; they wanted the privilege of doing their own work.

OSTEOPATHY DEFINED

The witness said that they had attempted a concise definition of osteopathy. Counsel then read the definition:

"Osteopathy means that system of the healing art which places the chief emphasis on the structural integrity of the body mechanism as being the most important single factor to maintain the well-being of the organism in health and disease."

Counsel suggested there was no difference between maintaining structural integrity and "keeping fit"—on the desirability of which everyone was agreed. Unless osteopaths could be differentiated from the body of practitioners the whole Bill fell to the ground. "May I take it," he said, "so far as you know, what is here defined as osteopathy is that which is practices by every medical man?"—"No," said the witness; "I would not go that length." Replying to further questions, the witness agreed that everybody ought, if they had considered the matter, to place the chief emphasis on the structural integrity of the body mechanism as being the most important single factor to maintain well-being.

Can you conceive anybody who does not? What sort of person does not?—Every physician who says there is no good in osteopathy.

The physician may be a poor benighted fool, who thinks that osteopathy is not the best way of maintaining the structural integrity of the body mechanism, and he may be striving for it by some other old-fashioned method?—That is the different viewpoint.

MAJOR AND MINOR SURGERY

Coming to major surgery—for the first time in this country you are laying down a definition, a limitation between what a healer may and may not do, subject, of course, to certain well-defined exceptions. What do you mean by "major surgery"? Take an appendicitis case, when it is a simple operation to remove the appendix. Would that be major or minor surgery?—That would be a major operation.

The witness added that he would consider the excision of a small mark on the throat to be the function of a surgeon, and would refer it to a specialist. "So," said counsel, "the test is what a general physician would usually require a surgeon to perform. Does it not occur to you that a good deal must depend on circumstances?"—Witness: "I admit it is a very difficult thing to do."

It is quite possible, is it not, to start what you believe to be a very minor operation and then, either by ill-luck or something else, to find yourself suddenly let in for a big operation?—I should have thought that if one submitted to a curriculum of five years' duration, that one ought to be able then to open up a boil or snip off a skin tab, or do a little minor operation.

You have not made your definition here on opening up boils. May you not, when you have embarked on a very minor operation, find some condition which automatically involves that minor operation being turned into a major operation?—That is so, but I maintain that five years' training, with a Board such as has been suggested, ought to equip the osteopath to know when to refer the case to a specialist.

You agree with me that it really is ridiculous to say to a man, "You may do minor surgery, but you must not do major surgery"?—We admit the difficulty.

Therefore, is it not hopelessly wrong to put on the Statute Book this piece of legislation, which authorises a man to do minor surgery and makes it a criminal offence for him to do major surgery?—I admit its inconsistency, in view of what you say; but I would like to say what our object in that connexion is. We want to develop a system whereby we can carry on our work, and be in a position to confer with the orthodox profession when we feel our patients can be beneficially treated in conjunction

with our own treatment, and to turn out expert osteopathic practitioners. We are not trying to turn out major surgeons. We do not want to communicate every little thing that comes in the course of general practice. I say that, speaking for myself, personally.

Counsel said he was only pointing out the impossibility of the whole scheme as it was seen in the Bill as now altered. Replying to further questions, the witness remarked that at present there was nothing to prevent a man doing major surgery—Sir W. Jowitt pointed out that there was no penalty contained under the proposal before the Committee for an osteopath who deliberately performed major surgery.—The witness said that in America the osteopaths had hospitals, and practised surgery. In some States they had to undergo extra training if they wished to practice major surgery, while in others they had not to do so. He had followed the effect of the Basic Science Law recently passed in many of the States. He was not aware, however, that in these States everybody, to whatever school of thought he belonged, either orthodox medicine, chiropractory or osteopathy, had now to pass a certain State examination.

"Do you know that the osteopaths in America have fought bitterly against having to submit to this Basic Science Law?"—The witness said he knew that in the State of Oregon they had submitted to it, and that in some other States they had fought it.

STILL'S TEACHING AND THE USE OF DRUGS

Asked whether he could show any evidence that Dr. Still admitted that drugs were necessary, the witness pointed to the whole teaching. Dr. Still, he said, never said that he could take any case, from any part of the world, where the functions were destroyed.

COUNSEL: I can find many passages in this book where he said he did not believe for a moment that God in His infinite wisdom would allow a system of curing one poison in the body by putting in another?

The WITNESS: Except in emergencies.

COUNSEL: I do not suggest that people when perfectly well and strong should have drugs given to them. I can understand you if you say that there are medical practitioners who have emphasised too much the ability of drugs and too little the necessity for healthy exercise and care of the body. Would it not be mere obscurantism to say that there are not many diseases, which you in this Bill are asking to be allowed to deal with, which must involve the use of drugs?—The Witness: I think there are a few drugs which are proved to be useful.

COUNSEL: Did not Still say that in no case could disease originate without a broken or suspended current of arterial blood?—The Witness: He said a disturbed artery marked the day, hour, and minute when disease began.

COUNSEL: Is this true, reading from your book? The passage reads that "in no case could disease originate without a broken or suspended current of arterial blood which was intended by nature to supply and nourish all nerves, ligaments, muscles, skin, bone, and arteries. He declared that there was no exception to this law, and the flow of arterial blood must be unrestricted or disease necessarily results." The passage also contained the fact that Dr. Still discarded the use of drugs altogether.

The Witness said it did not apply in the case of emergency, accident, or injury. He had never known Dr. Still to say that he could cure every case regardless of the condition.

COUNSEL: Then do I understand that this statement in your book agreeing with what I have stated in Dr. Still's book is incorrect?—The Witness: You have to remember that this was a popular book on the practice of osteopathy and was not meant to be a text-book.

Counsel suggested that the book set out to be an authoritative exposition. If, he asked, you construct a theory and find one case that does not fit in, it proves that you have constructed your theory inaccurately?—The Witness replied that he had never claimed that they could cure every case of cancer or tuberculosis regardless of condition, and accidents and injuries. He certainly did not claim that all diseases were due to spinal lesions. He believed that the cause of disease was a lesion somewhere.

COUNSEL: That is fundamental to your whole theory?—The Witness: I would say so.

COUNSEL: And that differentiates you from the orthodox school?—The Witness: The spinal lesions differentiate us from the orthodox school.

"THE BODY CONTAINS ALL THE REQUIRED DRUGS"

COUNSEL: The foundation principle of Dr. Still is the principle of the osteopathic lesion as being the cause of all disease, that the body contains all the drugs that are required and that therefore all you have to do to cure any disease is to correct a lesion and let loose the natural forces of the body?—The Witness: That is the general proposition. I do not say in every particular.

With reference to a case of diabetes the witness was asked if he would agree that insulin was the proper treatment to give. He said that he would refer such a case to a medical specialist in conjunction with his own treatment. In a case of diphtheria he would give the usual antidiphtheria treatment in conjunction with his own treatment, and for malaria he would adopt the orthodox treatment. That exhausted most of the specifics. Asked if the bite of a mosquito was a lesion the Witness replied that the circulation, owing to the bite, was interfered with at the site of the inoculation. He agreed that measles might spread and was obviously catching.

Counsel asked whether the witness had considered the causes of disease. Was it not ridiculous to say that the cause of disease was an osteopathic lesion, and leave out of account the fact that one boy might give it to another?

The WITNESS replied: I do not say that there was no predisposing cause. I have not admitted that even in measles there may not be a predisposition to lower vitality which enables a man to contract measles.

Lord DAWSON remarked that that was against the weight of knowledge. It was a common experience that a robust boy would get measles, and one boy would get the disease slightly whilst another would get it severely.

In further cross-examination by Sir W. JOWITT the Witness said he was asking that osteopaths should have the right not merely to manipulate, but to treat disease.

COUNSEL: You are asking not only that you should have the right to treat disease but should be recognised by the State as private people to be given a special privilege?—The Witness: I do not think it is a special privilege. We have the privilege at present to a greater extent even than we are asking from the State by the Bill. The Witness added that if they studied five years under the suggested curriculum that ought to be some guarantee to the public.

BACTERIOLOGICAL FINDINGS

Replying to Lord CARNOCK the Witness said that osteopaths did not object to inoculation for typhoid or vaccination.

Sir W. JOWITT asked the witness if malaria was caused by the bite of a mosquito which injected some poison into the blood.—The Witness said that was so.

Counsel proceeded to quote from a well-known osteopathic text-book by McConnell and Teall in which he said it was stated that in malaria disturbance would always be found in the region of the eighth or eleventh dorsal vertebræ inclusive of the corresponding ribs on the other side. He asked the witness if he believed that if a person was bitten by the appropriate sort of mosquito which injected this stuff into the blood one always found that there was a considerable displacement between the eighth and eleventh dorsal vertebræ?—The Witness said that he believed that any interference with the

viscera which had to do with the immunity of the body had an effect on the spinal column.

Do you suggest that the cause of malaria is this disturbance, or is it a result?—It might be a result; it works both ways in a vicious circle. If there is any vital disturbance in those parts of the body which have to do with immunity you might have lesions in the spinal column.

Does that mean that if I have not got anything wrong with my spine it does not matter whether a mosquito bites me or not?—I am not saying that if you have a mosquito bite you may not have trouble, but if you are going to get over the effect of it you might be well to have osteopathic treatment.

It follows that if I get bitten by a mosquito I may get malaria even though I have nothing wrong with my spine?—No one said you could not.

You accept the work of bacteriologists and view bacteriology from the same point of view as the orthodox school of medical thought?—We accept their bacteriological findings.

There is no doubt that in malaria the bite is the primary cause of the disease.—Yes, I accept that if the bodily defence has broken down. I look upon the bite of a mosquito just as I look on a person who stabs you in the back with a knife. That breaks down the bodily defence, the vitality is lowered, and you have to do the best you can.

Replying to further questions the Witness said that he believed that it was only those bacteria which got into the body mechanism which could do harm. He accepted the view that bacteria which got in were the cause of some diseases including malaria, typhoid, tetanus, and bilharzia.

TREATMENT OF INFECTIOUS DISEASE

The Witness agreed that diphtheria, anthrax, and pneumonia were causd by bacteria. Asked how he would treat pneumonia the Witness said that in cases of pneumonia and diphtheria or any infectious disease osteopaths aimed to do exactly what the orthodox practitioner did by his sera and antitoxins. They liberated a certain amount of toxins which were generated in the body as a result of bacterial invasion. Next they introduced some more toxins and distributed some of the antitoxins generated as a result of the bacterial invasion. That was the way the fight went on until the patient either got well or died. They appealed to the natural immunising properties of the human mechanism to meet the invasion.

How does your treatment differ from the orthodox medical treatment?—We manipulate the spinal column for one thing and attempt to establish a free nerve and blood-supply to the whole of the body mechanism.

Replying to further questions the Witness said that in a pneumonia case it would depend on circumstances how often an osteopath would apply treatment, but he thought on an average he would apply treatment two or three times daily.

Supposing an illness ends fatally, the cause of death may be an overstrain on the heart?—Very often.

That is a danger you have to guard against in pneumonia, is it not?—Yes.

And it is the same in diphtheria?—Yes.

Do you not realise that the treatment of these diseases twice or three times a day by manipulation of the spine may put a very considerable strain on the heart?—No.

THE USE OF DRUGS

COUNSEL: Shall I be fair if I say that so far as the treatment of disease is concerned you do not depart from the orthodox medical treatment in any respect save two? One is positive and one is negative. The positive is that you give in proper cases spinal manipulation and the negative is that, subject to exceptions, you do not give drugs?—The Witness: These are two broad generalisations. I think that is so.

Counsel then proceeded to take the Witness through a number of statements contained in the book "Principles of Osteopathy," by Dr. Yale Castrio, Kansas City, referring to the use of various drugs. The Witness admitted that osteopathy was a revolt against drugs, but he certainly thought the use of drugs was beneficial in certain of the cases that had been mentioned. He also thought that among the aids were antiseptics, anæsthetics, stimulants, anodynes, cathartics, and narcotics.

COUNSEL: That seems a pretty wide category?—The Witness: When you consider the whole ground of treatment, surgical and otherwise, I do not think it is too broad.

COUNSEL: The whole field of medicine is common to you, subject to the positive and negative sections. With regard to the negative section—the use of drugs—I say that osteopaths use from time to time a list of drugs which seems to me to be perfectly complete?—The Witness: Not for curative purposes. In an emergency case you might have to use a heart stimulus. I can imagine that to be the practice in connexion with accident cases.

COUNSEL: Assuming that there are occasions in practice when the use of those drugs is necessary, do you say that it is right that the State should recognise as physicians, and authorise them to deal with every disease, students who have no knowledge of materia medica?—The Witness: The purpose of the Bill is to train students to be able to handle those emergency cases and others.

COUNSEL: My question relates to materia medica. Do you ask for a Bill under which the State is going to place on the Register persons who are to have the right to treat every disease if they have not some knowledge of materia medica?—The Witness: I think every practitioner ought to know something about drugs, poisons, antidotes—a comparative knowledge of all therapeutics, in fact.

COUNSEL: You agree that the student ought to learn the materia medica?—The Witness: I do not think he need spend four years studying medicine from that angle.

Counsel pointed out that the British School of Osteopathy said they required all their students to take a full year's course in pharmacology and therapeutics in order to be familiar with medicine and medicinal treatment in all its aspects. He asked if it was what the Witness recommended.

The Witness said he believed that every practitioner ought to understand the broad principles of pharmacy. On being asked whether he accepted the work of physicians and medical men who specialised in remedial measures, electric treatment, and even manipulation, the Witness replied that he thought they were on the right lines.

COUNSEL: Why should not you and the osteopaths start by passing the ordinary medical examinations and then develop your technique exactly on what lines you like? What is the objection?—The Witness: I think Counsel in his speech on the opening day said it was just as reasonable to expect Anglicans or Non-conformists to train in Roman Catholic Seminaries and vice versa.

The Witness said he had embraced the osteopathic faith after considerable thought. He agreed that what the promoters wanted to do by the Bill was to try to remove the unhappy differences of opinion between the two professions; and if the Bill was passed in its present form he hoped these differences would not remain, but would be removed.

Counsel remarked that he thought that that was a completely false expectation.

A DIFFERENT VIEWPOINT

The witness agreed that speaking generally, in the curriculum through which a medical student went, there was nothing that would not be useful to the osteopath in carrying on his profession. If, however, one had a different point of view, he thought that to train a student for five years from the medical viewpoint would not be to turn out a first-class osteopath. Osteopaths put entirely different interpretations on many anatomical facts. They maintained

their osteopathic institutions because of the difference; the viewpoints were not the same.

So the difficulty of your scheme is this, that you expect a student to join and adhere to the ranks of the osteopaths before he has any sufficient knowledge to enable him to form an opinion whether the osteopaths or the doctors are right?—He does that when he goes into medicine, doesn't he?

I understand it is the contrary. You have the illustration of Dr. Macdonald, who carries on his practice as an osteopath, but who has a medical degree?—He is a very sensible man, who has thrown over medicine.

Do you think that all the knowledge he has acquired is useful to him?—It is his job to speak for himself.

It is the old materia medica point?—No. It is not necessary, so far as I can understand, for Dr. Macdonald to go to a medical school to get the viewpoint which he has now.

THE RIGHT TO PRACTISE OSTEOPATHY

Counsel pointed out that under the provisions of the Bill a person should be entitled to be registered if he held some recognised certificate granted in British Dominion or foreign country. At present, if a fully qualified American doctor came over here he would be regarded as a layman strictly in the eyes of the law.

The WITNESS: Is there not reciprocity?

There is reciprocity in the case of Italy and Japan, and the Colonies; but not with the U.S.A.

The WITNESS: I think that this ought only to operate for those who are in the country at the present time and have been here for years.

The third qualification, and the more important one, is "that prior to the passing of this Act he has carried on or has been engaged in the practice of osteopathy for three years."—Of course, these persons would have no privileges beyond what they have now, except the right to go on and earn their own livelihood.

There would, the witness added, be no examination. They just get a certificate to go on as they were. A person of bad character would not be allowed on the register.

Lord ELIBANK said that in presenting the Bill to the House of Lords he had put a much broader application on that particular clause, and he had in mind not only that the person registered should not be a bad character but that he should be fitted to practise osteopathy. Now that the definition of the osteopath has been changed, so that it cannot possibly affect a bone-setter or a chiropract, or any other system, I am, personally, in favour of striking out Clause 5 (3).

USE OF THE WORD "CURE"

Mr. RADCLIFFE (who represents the Royal College of Surgeons of England and the Royal College of Physicians of London) then proceeded to cross-examine Mr. Streeter.

Questioned as to what he meant by his evidence that he had never used the word "cure" in his practice in connexion with any ailment and had never professed to cure anything, the Witness said he meant that in the last resort nature did the curing. He tried to help nature.

There is no doubt, is there, that osteopathy claims to be a system of cure?—Oh, yes, of helping to cure. The Witness added that he accepted the words "system of curing."

ANOTHER DEFINITION OF OSTEOPATHY

Counsel read from the witness's book, in which, he said, Mr. Streeter was conducting a catechism for the benefit of people who did not know anything about it. He had defined osteopathy as "a great system of drugless medicine and bloodless surgery."

The Witness agreed that he defined that as meaning curing disease without drugs or surgical operations by osteopathic manipulation. He had never guaranteed to cure anybody of anything.

You think it is well defined by yourself as a system of drugless medicine and bloodless surgery?—I have tried to explain on several occasions that that is a point of view, an idea; that the word "osteopathy" has been so confused with other systems used by the laity in so many relations. I wished to show that osteopathy meant more than mere manipulation for setting a misplaced cartilage or a strain.

USE OF DRUGS "IN CERTAIN CASES"

The Witness added that he applied it to all the ills to which human flesh was heir, and in that sense it was drugless medicine, in theory. It was not possible always to put theory into practice in every individual case. It was fair to summarise his evidence by saying that it was a system of drugless medicine which, in certain cases, admitted the use of drugs.

So, when you come to teach your students in your schools, will you teach them to apply the general principle of no drugs and the particular cases of the exception?—When they are asked to use any drug which has proved to be beneficial; it has never been part of the osteopath's profession never to use drugs in the abstract.

By what principles will you teach your students to distinguish the cases when they should use drugs from the cases when they should not?—I think we should apply our principles in all cases, and if we feel we can help them by the use of adjuncts we are entitled to do that. It is the same in regard to dietetics.

How will you teach your students to distinguish one case from the other?—I do not know how to answer in any other way. We study all the subjects taught in any ordinary medical school from our own point of view, and use all the diagnostic methods, and claim to be able to diagnose the various forms of ill-health—osteopathic diagnosis.

You are not proposing to teach them anything about drugs?—Oh, yes.

Where, in the schedule of the Bill, is that provided for?—Poisons and their antidotes.

I did not say poisons, I said drugs?—We are providing another year now to give us a chance to get in some.

SPINAL LESION IN TYPHOID

The Witness gave support to the belief that spinal lesions were present in cases of typhoid fever. He thought there must be something like that as a predisposing cause.

Lord DAWSON asked the witness if he had any X ray pictures showing displacement lesions in typhoid.—The Witness replied: No. We are a young profession and we have not established all the facts we want to establish. Nor did he think it possible to show by X rays all the maladjustments of the spinal column.

Lord DAWSON: Have you ever seen any X ray pictures showing the displacement of the bones?—The Witness: Not in connexion with typhoid fever. They may exist, but I have not seen them.

Lord DAWSON then declared that the production of such photographs was crucial evidence. If it existed it should be produced.

To this Mr. THORPE objected that if he were asked to show that the osteopathic theory of causation of disease was right he must get entirely new evidence and reconstruct his case. He had thought rightly, or wrongly, that the object of the inquiry was to decide whether osteopaths were giving a benefit to the public and ought therefore to be given registration.

Lord ELIBANK observed that if the Committee were going to examine the whole theory and practice of osteopathy, they might sit until 1936 and come to no conclusions; whereupon the CHAIRMAN said he did not see the necessity of going into the history of the subject. The evidence of the witnesses should be completed.

OSTEOPATHS IN ENGLAND

Mr. RADCLIFFE, on resuming his cross-examination of Mr. Streeter, asked him a number of questions regarding the British School of Osteopathy.

The WITNESS replied that he regarded those qualified at the school as representative of qualified osteopaths. They had not the hospital facilities they ought to have, but they had a fair knowledge of osteopathic

concepts. He did not know whether their qualification was recognised by any of the American colleges. The British osteopaths were united in asking that the Bill should be passed. Counsel was proceeding to inquire of the witness the number of osteopaths in this country when Mr. Thorpe interrupted by saying he was going to prove that there were 179 osteopaths in Breat Britain and Ireland. The Witness then informed counsel on certain details of the comprehensive course of education which was laid down for the students.

OSTEOPATHS IN SCOTLAND

Mr. H. BEVEREGE (who appears for the Royal Faculty of Physicians and Surgeons, Glasgow; the Royal College of Surgeons of Edinburgh; the Royal College of Physicians of Edinburgh; and the Universities of Glasgow, Edinburgh, St. Andrews, and Aberdeen) questioned the witness in regard to the effect of the Bill on Scotland.

Mr. STREETER informed counsel that of the 179 qualified osteopaths practising in the United Kingdom about half a dozen practised in Scotland. He could not say how many of the estimated number of between 2000 and 3000 unqualified osteopaths in this country were in Scotland.

OSTEOPATHS AND CHIROPRACTORS

Replying to Mr. ST. JOHN RAIKES (appearing for the British Chiropractor's Association) the Witness admitted that the number of chiropractors in the United States exceeded the number of osteopaths. There was however good reasons for that.

The grounds of your opposition to the chiropractors' profession, which to some extent is founded on the teaching of Galen, is that it is founded on wrong principles, and that the course of instruction is insufficient?—Yes.

Do you not realise that those are exactly the grounds on which you are being opposed by the medical societies—namely, that osteopathy is founded on wrong principles, and that your course of instruction is insufficient?—Yes, I realise that. One of the purposes of the Bill is to establish a course of instruction that will meet with approval.

Replying to further questions by counsel the witness said that the osteopaths were not opposing the chiropractors in any way and there had never been any intention to interfere with them.

Mr. ST. JOHN RAIKES pointed out that the opposition of his clients was based upon the fact that they apprehended that, as their treatment was in main respects similar to that of osteopathy, if they continued their present practice after the passing of this Bill they might be held to have indirectly held themselves out as osteopaths and thus render themselves liable to heavy penalties.

Mr. THORPE intimated that the promoters were prepared to offer a clause which would protect the chiropractors in their present status.

Mr. RAIKES said that the form of clause which his clients would desire would be as follows:—

"Nothing in this section shall in any way hinder or prevent registered members of the British Chiropractors' Association from practising the science of palpating and adjusting the articulations of the human spinal column in accordance with their established system, or render any such member liable to penalty under this section."

OSTEOPATHY IN MEASLES: THE WITNESS PRESSED

Mr. THORPE re-examined the witness on the question of immunity which had been raised at a former sitting of the Committee. The witness said that he was not surprised that the medical profession did not accept his views that in the case where a boy at school started an epidemic of measles, those who escaped had some form of structural immunity because they were in full health.

In reply to Lord Dawson, the witness said that the fact that the boys did not take measles was because they did not have osteopathic lesions and must have a natural immunity.

Lord DAWSON said that that was a statement of a very startling and interesting character, which he would like to investigate. He asked what scientific investigation and research had been made by osteopaths to establish that view. The witness said that a large number of investigations, including X ray examinations, were being carried on at the A. T. Still Research Institute in relation to lesions. He could produce a lot of evidence that the osteopathic spinal lesion affected the nerves and the blood-supply of all parts of the body.

Pressed by Lord DAWSON to say if he could produce evidence of scientific inquiry and research on which he based his statement that the boys were immune from measles because they were influenced by the absence of the osteopathic lesion, the witness said he had misunderstood the question. He had no definite information in regard to measles by itself, but they had information on the relation between the osteopathic spinal lesion and the general immunity of the body.

Lord DAWSON: Then we are getting down to grips. There is no evidence of any investigation of a scientific character on which that theory is based.

Evidence of Dr. W. K. Macdonald

Dr. WILLIAM KELMAN MACDONALD, of Edinburgh, the second witness for the promoters, said he was a doctor of medicine in the University of Edinburgh and a doctor of osteopathy. He graduated as a bachelor of medicine and surgery at that university in 1907. He spent 18 months doing original research work in the laboratory of the Royal College of Physicians of Edinburgh, and made a special study of sensory nerve endings in muscles. He put that in the form of a thesis for his M.D. degree, and was awarded a degree with first-class honours and received a gold medal. He graduated in 1912 as a doctor of osteopathy at the American School of Osteopathy at Kirksville. Except for the war years, he had practised osteopathy ever since, and estimated that he had treated over 4000 persons.

Explaining how he came to study osteopathy, the witness said that he was ill and his father persuaded him to go to an osteopath in the face of his protests. Dr. Streeter treated him and paid the most minute attention to his bodily framework. He found the one place in his body in which he said he was interested, the third or fourth dorsal region of the vertebral column. That was the part of his body which he had injured in playing Rugby football years before, and had been made worse by his bending over a microscope. Dr. Streeter treated him very naturally, made no suggestion of drugs or diet, but really manipulated the abnormality, and it got well. The treatment was entirely new to him, and he felt he ought to go to America to prove for himself that there was nothing in osteopathy. He went, but became interested in it, and adopted it as being, in his opinion, the most sound method of healing which he knew.

Colonel H. C. Lloyd Howard and Sir Hereward Wake were called by the promoters to speak to the efficacy of osteopathic treatment in circumstances where ordinary medical treatment had not succeeded.

Dr. Macdonald was then recalled for further examination by Mr. Thorpe. He described his associations with Dr. Still in America in 1910 and 1911. Dr. Still, he said, lived a humble life as a backwoodsman. He was a very honourable man, and essentially practical. The osteopathic students' course at that time was a three years' course. A fully qualified man had to do two years special training. They had evolved a system of healing which was capable of handling the majority of diseases. This osteopathic healing was not a collection of various methods as sometimes was the practice in medicine, but it was a system of practice based on the principle that the body contained within itself the power needed to heal the body and its ills. He believed osteopathy was still an art, and he thought medicine was still an art. There was

observation, and the observation was repeated until the law was formulated and tested. That procedure only became a science when the law and procedure were universally applicable and never went wrong. No one system contained the whole truth, and no one system had been evolved into a science. Osteopathy, he argued, was physical. The medical man stood for the chemical value of things. The therapeutic physician stood for the mental aspect of things, and his treatment was along mental lines. These men were pursuing different lines of healing. Biochemists, he considered, were tending to confirm the contentions of osteopathy. He submitted that the first premise with regard to osteopathy was that structural integrity determined normal function. The second was that there was more than one factor in the production of disease. The third was that a deranged mechanism could be normalised by manual adjustment and manipulation by osteopathy. The fourth premise was a friendly feeling for the other non-drug natural methods of healing. The witness afterwards gave a general explanation of the spinal lesions and causes such as posture, nerve reflexes, and disturbance. Though such lesions were not the primary cause of disease they tended to maintain it or prevent the normal recovery from it. X-ray photography was difficult for the purpose of demonstrating lesions, but generally they were demonstrable by X-ray examination, because they were so common and so slight. Radiologists who had been trained to recognise them were capable of doing so, but he found them unwilling to do so. He maintained the value of research and looked to its encouragement by the passing of the Bill. Research work that had already been done was exceedingly encouraging. A great deal had been done to prove that osteopathic contentions were correct. He did not claim that osteopathy could cure all diseases, but he claimed that there was no disease acute or chronic in which osteopathic treatment had not some all-important and irreplaceable part to play.

HOUSE OF COMMONS

WEDNESDAY, MARCH 6TH

Medical Rejections of Naval Recruits

Mr. PIKE asked the First Lord of the Admiralty the number of boy naval recruits for the year ended Dec. 31st, 1934, whose applications were accepted compared to those rejected; and the reasons given by His Majesty's medical advisers to the Admiralty for such rejections.—Sir BOLTON EYRES-MONSELL replied: The total number of applications was 13,894, and the number required and entered was 3063. Of those who were not entered, the number rejected on medical examination was 1940. Defective vision and defective teeth accounted for considerably over half the number of rejections. The list of reasons is as follows:

Under standard			51
Poor physique			61
Disease of heart—			
Organic			11
Functional			88
Tachycardia			6
Defective vision	558		
,, colour vision	272		1091
,, teeth	261		
,, speech			10
Disease of skin			12
,, ears			74
,, eyes			3
,, lungs			3
,, glands			6
Hernia			29
Flat-feet			70
Knock-knees			70
Varicose veins			16
Pyorrhœa			13
Enlarged tonsils			102
Phimosis			28
Bronchitis			14
Hammer-toes			13
Old operations			2
Old injuries			7
Deformities			26
Spinal curvature			8
Undescended testicle			5
Hydrocele			11
Varicocele			33
Incontinence of urine			10
Hæmorrhoids			2
Albuminuria			23
Other defects			42
Total			1940

Tuberculosis in the Navy

Mr. PIKE asked the First Lord of the Admiralty if he would give the latest statistics of tuberculosis amongst members, all ranks, of His Majesty's Navy, the numbers of cases in which the disease was decided to have been latent upon enlistment, and the numbers that had contracted the disease whilst serving; and what steps were being taken to counteract a spread of the disease before and after contraction.—Sir BOLTON EYRES-MONSELL replied: The latest available statistics are for the year 1933. In that year there were 176 cases of tuberculosis in the Royal Navy. With present medical knowledge, it is not possible to differentiate between cases latent upon enlistment and those contracted while serving. Methods employed to prevent the occurrence of the disease include constant medical inspection of naval personnel, physical training, instruction in personal hygiene, supervision of living accommodation, diet and ventilation, and regulation of the temperature of H.M. ships. In order to prevent the spread of the disease after contraction, all cases of tuberculosis are taken to hospital and the usual processes of disinfection are carried out in the ship or establishment concerned.

THURSDAY, MARCH 7TH

Dismembered Bodies in Railway Cloakrooms

Captain CUNNINGHAM-REID asked the Home Secretary if the Commissioner of Police for the Metropolis was satisfied that the existing regulations governing the depositing of packages at railway cloakrooms were adequate to prevent the growing use of these places for the concealment of dismembered bodies.—Sir J. GILMOUR replied: The Commissioner of Police has no information as to any growing use of railway cloakrooms for the concealment of dismembered bodies. The legs recently discovered on railway premises were found under the seat of a railway carriage.

Milk for School-children

Brigadier-General CLIFTON BROWN asked the Minister of Health whether he would advise county medical authorities to sanction the use of any milk for school-children which was produced by a registered producer who was qualified under the Milk Marketing Board's new accredited milk scheme.—Sir HILTON YOUNG replied: No, Sir. I am advised that milk which has been efficiently pasteurised is safer than raw Grade A milk. The Board of Education has recommended that it should be provided for school-children wherever it is available, a recommendation to which I agree.

Brigadier-General BROWN: Is the right hon. gentleman aware that at the present time many medical officers of health are insisting on a supply of pasteurised milk, whereas in many villages they cannot get such a supply. Is not that most unfair?

Brigadier-General BROWN: Does not this mean that the right hon. gentleman disapproves of his own Grade A milk scheme?

Sir HILTON YOUNG: No, Sir.

TUESDAY, MARCH 12TH

Atebrin as Prophylactic against Malaria

Mr. TEMPLE MORRIS asked the President of the Board of Trade whether his medical advisers recommended the use of atebrin as a prophylactic against malaria; and whether, in that case, the medical stores of ships trading in the tropics carried supplies of this drug.—Mr. RUNCIMAN replied: The medical advisers of my department are in close touch with research which is being made into the use of atebrin and other synthetic remedies intended for prophylactic use against malaria, but at the present stage they are not prepared to recommend such remedies for compulsory inclusion in ship's medical stores.

Operations for Sterilisation

Mr. POTTER asked the Minister of Health if he was in a position to state in how many cases was the operation of sterilisation carried out on male and on female patients in hospitals subject to his inspection in the counties of London and Middlesex in 1934.—Sir HILTON YOUNG replied: I am not in a position to state the number of operations performed in these hospitals during 1934 which may have resulted in sterilisation but I am informed that in no case was an operation of sterilisation performed

with the object of preventing the propagation of unsound offspring.

Unemployed Persons and Medical Benefit

Mr. KIRKWOOD asked the Minister of Health if he was aware of the large numbers of members of approved societies who were now out of health insurance owing to prolonged unemployment, and so must apply to the poor law medical officers instead of the panel doctors; what was being done to prevent these medical officers being unable, through overwork, to deal efficiently with their large numbers of new patients; and if he would take steps forthwith to enable all such persons to regain medical benefit with the panel doctors.—Mr. SHAKESPEARE replied: A number of persons have ceased to be entitled to benefits under the scheme of National Health Insurance by reason of prolonged unemployment and a proportion of these are having recourse to the public assistance authorities when in need of medical attendance. As regards the second part of the question, it is for the public assistance authority to see that their medical service is adequate for the needs of the area and my right hon. friend has every reason to believe that the authorities generally are alive to their responsibilities. As regards the last part, my right hon. friend has already stated that the whole position will be considered in the light of the First Report of the Government actuary on the financial operation of the Contributory Pensions Acts.

MEDICAL NEWS

University of Oxford

An election of two members of the board of the faculty of medicine of this university will be held on June 7th. Mr. H. S. Souttar and Prof. O. L. V. Wesselow, who are retiring, are eligible for re-election.

Nominations of candidates signed by six members of the general medical electorate should be received by the secretary of faculties at the University Registry, Oxford, before Friday, May 18th.

The Francis Gotch memorial prize for 1935 has been awarded to R. E. Johnson, Oriel College.

University of Cambridge

At recent examinations the following candidates have been approved:—

M.CHIR.

R. J. V. Battle, F. W. Holdsworth, and J. K. Monro.

Dr. Ffrangcon Roberts has been appointed an examiner for the diploma in medical radiology and electrology in place of Dr. A. E. Barclay who has resigned. Dr. A. St. G. M. Huggett will examine in pharmacology in the second M.B. in place of Prof. J. A. Gunn.

University of London

The senate will shortly consider applications for grants from the Dixon fund (for assisting scientific investigations) and from the Thomas Smythe Hughes and Beaverbrook medical research funds. These applications should be made in proper form between April 1st and May 15th, and further particulars may be had from the academic registrar. A studentship in physiology is also offered to students or graduates of the university, and seven post-graduate studentships are open to graduates of any faculty; also two post-graduate travelling studentships.

The Buckinghamshire county council has decided to make a grant of £5000, payable over ten years, towards the erection of the university's new buildings in Bloomsbury.

University of Edinburgh

On June 28th the honorary degree of LL.D. will be conferred on, among others, Dr. J. D. Pollock, honorary surgeon-commander, R.N.V.R., and Prof. A. N. Richards, of Philadelphia.

University of Sheffield

Emeritus Prof. J. B. Leathes, F.R.S., has been reappointed representative of the University on the General Medical Council for a further term of three years.

University of Glasgow

Among those who will receive the hon. degree of LL.D. at the graduation ceremonial to be held on June 19th are Dr. W. K. Hunter, late Muirhead professor of medicine in the university; Dr. J. M. Munro Kerr, late regius professor of midwifery, and Dame Louise McIlroy, professor of obstetrics and gynæcology in the University of London.

Aldershot Hospital

This hospital has been almost rebuilt and in the general scheme of reorganisation four private wards have been equipped. The balance sheet shows a credit balance of £1225 at the end of the year.

Royal Australasian College of Surgeons

It is announced that Mr. R. B. Wade, of Sydney, has been elected president of this college in succession to Sir John Newland.

Royal Medical Benevolent Fund

The ninety-ninth annual general meeting of the Royal Medical Benevolent Fund will be held in the lecture room of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Wednesday, March 27th, at 5 P.M. Sir Thomas Barlow, F.R.S., the president, will take the chair.

Western Hospital, Fulham

Mr. Lewis Silkin will, on Friday, March 15th, at 3.30 P.M., open the new isolation block which has recently been erected by the London County Council as an extension of this infectious diseases hospital. The new block is two storeys high and has accommodation for 77 cases.

Royal Free Hospital

The annual court of governors of the hospital will be held at the hospital on Tuesday next, March 19th, at 3.45 P.M., Dr. J. W. Carr presiding. The meeting will be addressed by Sir Arnold T. Wilson, M.P., when tea will be served and the hospital be open for the inspection of visitors.

Extension Scheme at Leamington

Warneford Hospital, Leamington, is erecting a new maternity department to replace the present inadequate accommodation. The number of maternity cases admitted has almost doubled during the last five years. The new department will have room for 20 beds, an operating theatre, an isolation block, and quarters for nurses and pupil midwives. An appeal is being made for £20,000 for the extension.

Health and the Law

Nine public lectures arranged by the Jewish Health Organisation of Great Britain, will be given at 8.30 P.M. on Saturday, from March 30th, at the Whitechapel Art Gallery, High-street, Whitechapel, E. The lectures will deal in a popular way with various aspects of personal hygiene and will also aim at describing the legal or administrative position of the principal public health services, with a view to a fuller appreciation of their value.

On March 30th, Prof. W. W. Jameson will give a general survey of public health in England during the past hundred years. Dr. Maitland Radford will lecture on the control of food supplies (April 6th); Dr. Hugh Gainsborough on the essentials of normal nutrition (April 13th); Dr. J. D. Rolleston on the prevention of infectious diseases (April 27th); Mr. H. Lesser on health insurance and pensions (May 4th); Dr. Leopold Mandel on preventable diseases in infancy and childhood (May 11th); Dr. C. S. Myers, F.R.S., on the prevention of accidents (May 18th); and Prof. F. J. Browne on maternal mortality (May 25th). The lectures are open to all and are free. On April 20th a lecture will be held in coöperation with the People's League of Health. The Secretary may be addressed at Woburn House, Upper Woburn Place, London, W.C.1.

THE annual dinner of the Irish Medical Schools' and Graduates' Association will be held at Claridge's Hotel, London, to-night, Saturday, March 16th, at 7.30 P.M.

North-Western Tuberculosis Society

Mr. H. Morriston Davies will read a paper on indications and results of phrenic nerve operations at the Tuberculosis Clinic, 352, Oxford-road, Manchester, at 3.30 P.M., on Thursday, March 21st. Medical practitioners interested in the subject are invited to attend.

King Edward's Hospital Fund for London

Hospitals situated within 11 miles of St. Paul's which want to participate in the grants made by this fund for the year 1935 should apply to the hon. secretaries of the fund, at 10, Old Jewry, E.C.2 (G.P.O. Box 465A), before March 31st. Applications will also be considered from convalescent homes which are situated within the above area or which, being situated outside, take a large proportion of patients from London.

Oxford Ophthalmological Congress

This congress will assemble at Keble College, Oxford, on July 3rd, and will continue its meeting until the 6th. The principal discussion, on the plastic surgery of the eyelids and conjunctival sac, will be opened by Sir Harold Gillies, and the Doyne memorial lecture will be given by Mr. Malcolm Hepburn, his subject being the rôle of the pigment and visual fields in the diagnosis of diseases of the fundus. The council has decided to institute a series of short talks in which a number of speakers will briefly give their views on a selected subject, and this year the subject is the results of treatment in retinal detachment of various types. Ophthalmologists who wish to join the congress are asked to write to the hon. secretary, Dr. F. A. Anderson, 12, St. John's Hill, Shrewsbury.

Mental After-Care Association.

The annual meeting of this Association will be held on Friday, March 22nd, at 3.15 P.M., at the Incorporated Accountants' Hall, Victoria Embankment, London, S.W.1, when the Viscount Wakefield of Hythe will be in the chair. Those expected to address the meeting are: Sir Hubert Bond, Sir Walter Langdon-Brown, Sir Thomas Keens, Dr. W. G. Masefield, Mr. J. M. Oakey, Dr. Reginald Worth, and Dr. H. Yellowlees, and a large attendance is anticipated. Tea will be served at 4.30 P.M., and all communications should be addressed to the secretary, Church House, Dean's Yard, Westminster, S.W.1.

Prevention of Trachoma

At a meeting of the Organisation Internationale de la Lutte Contre le Trachome to be held on Wednesday, April 3rd, at 2 P.M. in the house of the Royal Society of Medicine the opening address will be given by the president, Prof. Emile de Grosz. Dr. A. F. MacCallan will speak on the general principles of prophylaxis, and Dr. Josephus Jitta on the coöperation of the League of Nations. Dr. Tewfik, Prof. Myashita, and Dr. Zachert will deal with measures taken in Egypt, Japan, and Poland respectively, and a discussion will follow. The general secretary of the Organisation, Dr. F. Wibaut, may be addressed at Amsterdam, Hoofstraat 146.

Medical Celebrations in Vienna

On May 18th the Wiener Allgemeines Krankenhaus (Vienna General Hospital) will celebrate the 150th anniversary of its foundation. The President of the Austrian State will unveil a memorial to Johann Peter Frank. Prof. Julius Wagner-Jauregg will deliver an oration in his honour, and afterwards the President will formally open an exhibition of medical historical interest. In connexion with the celebration the 55th international post-graduate course in internal medicine is being held in Vienna, and from May 15th to 25th there will also be special sessions of the Medical Society of Vienna. On May 24th there will be a meeting at which the principal speakers will be Prof. P. Clairmont, of Zurich, and Prof. M. Neuburger, of Vienna. Receptions will be held by the President, the burgomaster of Vienna, and the Minister of Health, and a visit will be paid to the spa, Baden bei Wien. Further particulars may be had from the Kursbüro der Wiener medizinischen Fakultät, Wien IX., Alserstrasse 4.

Chesterfield Royal Hospital

A legacy of £10,000 has been left to this hospital by the late Alderman Eastwood.

Middlesex Hospital

The King has graciously commanded that one of the wards in the new Middlesex Hospital shall be called King George V. ward.

Cumberland Infirmary

A new central administrative block has been opened at this hospital by the Bishop of Carlisle. The work has cost £10,000, and the money has already been found, and provision made for further extensions.

A Milk Laboratory

The Minister of Health will open a new milk laboratory on April 5th when he visits the new depôt built by United Dairies, Ltd., near Shepherd's Bush, London. The depôt is the largest of its kind in the world. The laboratory is a two-storey building, covering 9000 square feet, and will be the central link in the company's chain of 33 laboratories. A special section is for testing machinery and plant before its adoption in the factories and depôts.

Physical Treatment for Paying Patients

The board of governors of the Royal Waterloo Hospital, London, has decided that the electrical and massage department shall be opened from 6 to 8 P.M. on Mondays, Wednesdays, and Thursdays for the treatment of paying patients. The service will be available to women who, though not ordinarily eligible for hospital treatment, are unable to afford the usual fees for massage over a long period. A charge of 2*s.* 6*d.* a session will be made. The intending patient should call at the hospital between 1 and 2 P.M. on Thursday, so that her special course of treatment may be prescribed. After this has been completed she will be referred back to her own doctor with a report of her condition. The work will be in charge of Dr. W. S. Gross.

Royal Sanitary Institute

The health congress organized by the institute, will be held at Bournemouth from July 15th to 20th. Lord Malmesbury will preside. The programme of the congress will be divided into sections dealing with preventive medicine, with Dr. Thomas Cornwall as president; architecture, town planning and engineering; maternity, child Welfare and school hygiene, with Lady Dawson of Penn as president; veterinary hygiene; national health insurance; and hygiene in industry. There will be special conferences of representatives of sanitary authorities; medical officers of health, over which Dr. Veitch Clark will preside; engineers and surveyors; sanitary Inspectors; and health visitors. A Health Exhibition will be arranged in connexion with the congress, in the Winter Gardens.

The offices of the Institute are at 90, Buckingham Palace-yard, London, S.W.1, and the local office for the Congress is Room 128, Town Hall, Bournemouth.

Prisoners and Physical Drill

Speaking at Lewes on March 8th at the annual meeting of the Sussex Prisoners' Aid Society, Mr. J. I. Blencowe, chairman of the Lewes justices, said a modern practice in Lewes prison was to give all able-bodied men physical drill under the direction of smart instructors. The result had been that when these men, especially the young ones, left the gaol they were physically fit. Probably, Mr. Blencowe added, the majority of them were more fit than they had ever been, and it was one of the first steps towards becoming mentally fit. Their condition made them the more ready to take up work the moment they came out of prison, and it was incumbent on the society to do all it could to find jobs for them and get them started again. Colonel G. D. Turner, of H.M. Prison Commission, in addressing the gathering, referred to cases in which surgical operations had cured delinquents of their criminal tendencies. It might be, Colonel Turner said, that as medical science develops, causes of wrongdoing, at present hidden, might be found amenable to appropriate treatment, and a much better penal system might be evolved.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimple-street, W.

TUESDAY, March 19th.

General Meeting of Fellows. 5.30 P.M.

Pathology. 8.15 for 8.30 P.M. Annual General Meeting. A. J. B. Goldsmith: Ewing's Tumour of Bone. E. N. Allott: Biochemical Observations on Addison's Disease. A. Felix: A New Antityphoid Serum. R. Hare: Changes in the Bactericidal Power of the Blood during Puerperal Fever. J. N. Alston: Stimulation of the Ovipositor of Certain Fishes by the Urine of Pregnant Women.

THURSDAY.

Dermatology. 5 P.M. (Cases at 4 P.M.) Dr. H. W. Barber: 1–3. Rosaceous Tuberculide. 4. Pustular Psoriasis. Mr. H. Corsi: 5. Chloasma Virginum Periorale. 6. Pigmentation of Face. ? Vitiligo. Dr. L. Forman: 7. Keratosis Pilaris, Scalp and Face.

Neurology. 8.30 P.M. Dr. D. Denny-Brown and Dr. J. Pennybacker: A Study of Fibrillation. Dr. J. St. C. Elkington: Metastatic Tumours of the Brain. Dr. W. Mayer-Gross: Some Observations on Apraxia.

FRIDAY.

Disease in Children. 5 P.M. (Cases at 4.30 P.M.) Mr. G. G. Penman: 1. Unilateral Proptosis in a child of ten due to Graves's Disease. Dr. J. D. Rolleston: 2. Femoral Thrombosis following Varicella. Dr. W. Sheldon: 3. Specimens from a case of Renal Rickets. Dr. R. H. Bailey (for Dr. Donald Paterson): 4. Atelectasis of the Right Lung. Dr. David Haler: 5. Skull of a child of 14 days in which there are no Cerebral Hemispheres. 6. Brain from a child of 21 days showing Diencephalorrhagia.

Epidemiology and State Medicine. 8 P.M. Dr. Evelyn Holmes: A New Approach to the Epidemiology of Tuberculosis.

HUNTERIAN SOCIETY.

MONDAY, March 18th.—8.30 P.M. (Simpson's Restaurant, Bird-in-Hand-court, Cheapside), Dr. Thomson Brown, Dr. Guy Bellingham Smith, and Mr. Ernest Miles: Itching.

CHELSEA CLINICAL SOCIETY.

TUESDAY, March 19th.—8.30 P.M. (Hotel Rembrandt, Thurloe-place, S.W.), Dr. R. D. Gillespie and Dr. C. P. Blacker: Sterilisation of the Unfit and the Race.

EUGENICS SOCIETY.

TUESDAY, March 19th.— 5.15 P.M. (Rooms of the Linnean Society, Burlington House, Piccadilly, W.), Dr. Frederick Grundy: The Genetics of Amentia: A Territorial Survey in a Rural Area.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, March 21st.—8.15 P.M. (Royal Army Medical College, Grosvenor-road, Millbank, S.W.), Laboratory meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, March 19th, and THURSDAY.—5 P.M., Dr. J. Shaw Bolton: The Evolution of Mind. (Lumleian lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, March 18th.—5 P.M., Mr. T. B. Layton: Nasal Problems of Egyptian Mummification.

FRIDAY.—5 P.M., Dr. John Beattie: The Anatomy and Physiology of the Cerebellum.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 18th, to SATURDAY, March 23rd.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. All-day course in orthopædics.—BROMPTON HOSPITAL, S.W. Tues., Wed., Thurs., and Fri., 5 P.M., course in chest disease. Sat. and Sund., all-day course in chest diseases.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. All-day course in clinical medicine and surgery.—Courses, clinics, &c., arranged by the Fellowship are open only to members and associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

MONDAY, March 18th.—Noon, Dr. W. W. Payne: Diabetes, (2) Treatment.

WEDNESDAY.—2 P.M., Dr. H. Sington: Ethyl Chloride for Short Operations in Children.

THURSDAY.—Noon, Dr. A. Signy: The Examination of the Urine.

FRIDAY.—Noon, Dr. D. N. Nabarro: Dysenteric Infection in Children.

Out-patient clinics daily at 10 A.M. and ward visits (except Wednesday) at 2 P.M.

CENTRAL LONDON EAR, NOSE, AND THROAT HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 22nd.—4 P.M., Mr. N. Asherson: Treatment of Chronic Otorrhœa.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 21st.—9 P.M., Dr. E. Mapother: Psychiatric Grounds for Abortion and Sterilisation.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, March 18th.—3.30 P.M., Dr. Hinds Howell: Acute Encephalitis and Encephalomyelitis.

TUESDAY.—3.30 P.M., Mr. Julian Taylor: Injuries of the Brain.

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. George Riddoch: Cerebral Abscess and Meningitis.

FRIDAY.—3.30 P.M., Dr. Hugh Davies: Radiology in Disease of the Nervous System.

Out-patient clinic daily at 2 P.M.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, March 18th.—10 A.M., medical wards and skin clinic. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, eye, and genito-urinary clinics. 4.15 P.M., Mr. Green-Armytage: Contraception.

TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics.

WEDNESDAY.—10 A.M., children's wards and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics. 4.15 P.M., Dr. H. W. A. Post: X Ray Diagnosis of Lesions of the Œsophagus.

THURSDAY.—10 A.M., neurological and gynæcological clinics. 11 A.M., fracture clinic. 2 P.M., eye and genito-urinary clinics.

FRIDAY.—10 A.M., skin clinic. Noon, lecture on treatment. 2 P.M., medical, surgical, and throat clinics. 4.15 P.M., Mr. Vlasto: Dysphagia.

SATURDAY.—10 A.M., medical wards, children's and surgical clinics.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James Hospital, Ouseley-road, S.W.

WEDNESDAY, March 20th.—4 P.M., Mr. Cecil A. Joll: Some Problems in the Diagnosis and Treatment of Diseases of the Thyroid Gland.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, March 20th.—4 P.M., Dr. Thomas Marlin: Practical Work in Manipulative Treatment.

CANCER HOSPITAL (FREE), Fulham-road, S.W.

THURSDAY, March 21st.—4 P.M., Mr. Douglas MacLeod: Precancerous Conditions of the Female Pelvis: Diagnosis and Treatment.

PRINCESS BEATRICE HOSPITAL, Richmond-road, S.W.

THURSDAY, March 21st.—9 P.M., Mr. Albert Worton: The Fundus Oculi in General Diseases.

GENERAL HOSPITAL, Newcastle-upon-Tyne.

SUNDAY, March 17th.—10.30 A.M., Mr. W. E. M. Wardill: Lecture.

ANCOATS HOSPITAL, Manchester.

THURSDAY, March 28th.—4.15 P.M., Dr. A. Renshaw: Various Forms of Asphyxia.

GENERAL INFIRMARY, Leeds.

TUESDAY, March 19th.—3.30 P.M., Dr. Moll: Tumours of the Lung.

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, March 20th.—4 P.M., Mr. A. D. Sharp: Treatment of Nasal Sinus Infection.

ROYAL INFIRMARY, Manchester.

TUESDAY, March 19th.—4.15 P.M., Dr. E. W. Twining: Radiology of the Chest.

FRIDAY.—4.15 P.M., Mr. W. H. Hey: Demonstration of Surgical Cases.

GLASGOW POST-GRADUATE ASSOCIATION.

WEDNESDAY, March 20th.—4.15 P.M. (Ophthalmic Institution), Dr. A. Garrow: Eye Cases.

HOSPITAL LIBRARIES.—The hospital library movement has been founded some 20 years and frequent references have been made to it in our columns. The movement is practically dependent upon voluntary help and only a comparatively small expenditure is incurred. Books are collected from donors who do not want them; so much is this the case that often the donors and the receivers are equally grateful. A drawing-room meeting of the British Red Cross Society and Order of St. John Hospital Library was held on Friday, March 1st, at 15, Montagu-square, W.1, by the kind permission of the Countess of Lucan, when to a crowded room Lord Balniel, M.P., in making an appeal for books, explained the movement which had, he said, its origin in the mind of Mrs. Gaskell, who still remained the central influence in their councils. All inquiries should be addressed to Mrs. Roberts, organising secretary, 48, Queen's-gardens, London, W.2.

Appointments

ANSON, C. E. H., M.B. Lond., Medical Superintendent of the Benendon Sanatorium, Kent.

FORMAN, LOUIS, M.D., M.R.C.P. Lond., Hon. Assistant Physician to St. John's Hospital for Diseases of the Skin, London.

HENDERSON, R. G., M.D. Aberd., D.P.H., Senior Assistant Medical Officer (Grade I.) to the South-Eastern Hospital, London County Council.

Certifying Surgeons under the Factory and Workshop Acts: Dr. R. HERWALD (Falmouth, Cornwall).

Vacancies

For further information refer to the advertisement columns

Ashton-under-Lyne, District Infirmary.—Res. Surg. O. £200. Also H.S. At rate of £150.

Belgrave Hospital for Children, Clapham-road, S.W.—Two H.P.'s and H.S. Each at rate of £100.

Bethnal Green Hospital, Cambridge-road, E.—Asst. M.O., Grade 1. £350. Also Asst. M.O., Grade 2. £250.

Birkenhead General Hospital.—Sen. H.S. At rate of £150.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Birmingham, Selly Oak Hospital.—Jun. M.O. At rate of £200.

Bolton Royal Infirmary.—Hon. Aural Surgeon.

Bradford Children's Hospital.—H.S. and H.P. Each £100.

Bradford Royal Infirmary.—H.S. At rate of £135.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency O. Also H.S. Each at rate of £130.

Cardiff, King Edward VII. Welsh National Memorial Association. H.P. for North Wales Sanatorium. At rate of £100.

Cardiff, Welsh National School of Medicine.—Asst. Lecturer. £500. Also Demonstrator. £200.

Cheltenham General and Eye Hospitals.—H.S. £300.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Radiologist. Also H.P. At rate of £100.

Coventry and Warwickshire Hospital.—Res. Cas. O. £125.

Doncaster Royal Infirmary.—Cas. H.S., and H.S. to Ear, Nose, and Throat Depts. Also H.S. Each £175.

Dorset County Hospital.—Matron. £160.

Edinburgh Royal Infirmary.—Clin. Asst. to Ear, Nose, and Throat Dept. £105.

Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.

Glasgow Eye Infirmary.—Res. H.S. Also Res. Asst. H.S. Each £100.

Grove Hospital, Tooting Graveney, S.W.—Res. Med. Supt. £1000.

Guildford, Royal Surrey County Hospital.—H.S. At rate of £150.

Halifax Corporation's Isolation Hospital.—Res. M.O. £350.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Hertford County Hospital.—H.P. £150.

Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100. Res. Aural Reg. £150. Also Sebag-Montefiore Research Fellowship. £500.

Hospital for Women, Soho-square, W.—Anæsthetist.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.S. At rate of £75.

Hull City Mental Hospital, Willerby.—Asst. M.O. £350.

Hull Corporation.—Asst. M.O.H. £600.

Kensington Royal Borough.—Asst. M.O.H. and Tuber. O. £900. Also two Asst. M.O.'s. Each £500.

Kidderminster and District General Hospital.—H.S. £150.

King Edward VII. Sanatorium, Midhurst.—Second Asst. M.O. £350.

Lancaster Royal Infirmary.—Sen. H.S. At rate of £175.

Leicester Royal Infirmary.—Jun. Res. Anæsthetist. £125.

Liverpool, City Infectious Diseases Hospital.—Asst. Res. M.O. £200.

Liverpool Royal Southern Hospital.—Hon. Orthopædic Surgeon.

London Lock Hospital, Dean-street, W.—Res. M.O. At rate of £175.

Manchester, Ancoats Hospital.—Two H.S.'s. Each at rate of £100.

Manchester, Christie Hospital and Holt Radium Institute.—Appt. on Med. Staff. £400–£700.

Manchester Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

Margate and District General Hospital.—Res. M.O. £150.

Medical Defence Union, Bedford-square, W.C.—Secretary. £1200.

Middlesbrough, North Riding Infirmary.—Cas. O. At rate of £150.

Middlesex Hospital, W.—Asst. Orthopædic Surgeon.

Nelson Hospital, Merton, S.W.—Two Res. H.S.'s. Each at rate of £100.

Newcastle-upon-Tyne City Hospital for Infectious Diseases.—Res. Med. Asst. £350.

Northampton General Hospital.—Hon. Asst. Surgeon. Also H.S. and Cas. O. Each at rate of £150.

Norwich, Norfolk and Norwich Hospital.—H.S. £120.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

Nottingham General Hospital.—Cas. O. At rate of £200.

Poplar Hospital for Accidents, East India Dock-road, E.—Hon. Asst. Phys. and Hon. Asst. Surg.

Preston and County of Lancaster Royal Infirmary.—H.S. to Cons. Surg. Also Cas. O. Each at rate of £150.

Princess Elizabeth of York Hospital, Shadwell, E.—H.P. and Cas. O. Each at rate of £125.

Reading, Royal Berkshire Hospital.—Res. M.O. At rate of £125.

Royal Army Medical Corps.—Commissions.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. £150.

St. Andrew's Hospital, Devons-road, Bow, E.—Asst. M.O. £250. Also H.S. and H.P. Each at rate of £120.

St. Bartholomew's Hospital, E.C.—Research Officer in Deep X Ray Therapy Dept. £500.

St. George's Hospital, S.W.—Asst. Dental Surgeon.

St. George-in-the-East Hospital, Raine-street, E.—Asst. M.O. £250.

St. Mary's Hospital, W.—Asst. M.O. for X Ray Dept.

St. Stephen's Hospital, Fulham-road, S.W.—Asst. M.O. £250.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £175.

Sheffield, Jessop Hospital for Women.—H.S. At rate of £100.

Sheffield University.—Chair of Anatomy. £1000.

Shrewsbury, Royal Salop Infirmary.—Res. H.P. At rate of £160.

South Middlesex and Richmond Joint Hospital Board.—Med. Supt. £750.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Second H.S. £150.

Surrey County Council.—Jun. Asst. M.O. for County Sanatorium, Milford. £250.

Swansea, Cefncoed Hospital.—Deputy Med. Supt. £525.

Swansea General and Eye Hospital.—Cas. O. At rate of £150–£175.

Swansea, Infectious Diseases Hospital.—Res. M.O. £350.

Taunton and Somerset Hospital.—Sen. House M.O. At rate of £150.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. Sorting O. At rate of £200.

West End Hospital for Nervous Diseases, Gloucester-gate, N.W.—Res. H.P. At rate of £100.

West London Hospital, Hammersmith-road, W.—Cas. O. £250. Also Hon. S.

Willesden General Hospital, Harlesden-road, N.W.—Res. Officer. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Leominster, Herefordshire; and Peebles, Peebleshire.

Births, Marriages, and Deaths

BIRTHS

ALLERTON.—On March 5th, at Torquay, the wife of George Allerton, M.C., M.B. Lond., of a son.

BENTON.—On March 8th, at the City Hospital, Nottingham, the wife of Sidney B. Benton, M.R.C.S., L.R.C.P., of a son.

BROAD.—On March 6th, at Bromley, Kent, the wife of Dr. James Broad, M.B. Camb., of a daughter.

CROOKS.—On Feb. 27th, at Harley-street, W., the wife of James Crooks, F.R.C.S. Eng., of a daughter.

GERVIS.—On Feb. 28th, the wife of W. Harvey Gervis, F.R.C.S. Eng., of Tunbridge Wells, of a daughter.

HOLMAN.—On March 2nd, at Finchley-road, N.W., the wife of F. Geoffrey Holman, M.R.C.S. Eng., of a daughter.

KIRWAN-TAYLOR.—On March 8th, at Cadogan-square, S.W., the wife of Gordon Kirwan-Taylor, M.D. Camb., of a son.

MACKENZIE-WINTLE.—On March 1st, the wife of H. Mackenzie-Wintle, M.R.C.S. Eng., of a son.

MAITLAND.—On March 4th, at Cupar, Fife, the wife of D. R. Maitland, M.B. Edin., of a son.

ROWE.—On March 4th, the wife of J. T. Rowe, M.R.C.S. Eng., Basingstoke, of a daughter.

THOMPSON.—On March 5th at a nursing-home, Birmingham, the wife of Dr. Keith Thompson, of a daughter.

MARRIAGES

BRAYDON—WATSON.—On March 8th, Arthur Francis Braydon, of Athens, Greece, to Grace Watson, M.R.C.S. Eng., Coram-street, London, W.C.

DRAKE—ELSTON DAVIES.—On March 2nd, at Holy Trinity, Paddington Surgeon. Lieut.-Comdr. Dennis C. Drake, R.N., to Kathleen Elston Davies, eldest daughter of Mr. F. H. Rust, of Leinster-square, London, W.

FOWLER—TURNER.—On March 2nd, at St. Mary's, Cadogan-street, London, Eric Fowler, M.B. Oxon., of Crowborough, to Agatha Clare, youngest daughter of Mr. and Mrs. Joseph W. Turner, of Lytham.

MCLAUGHLIN—VIRET.—On March 2nd, at St. Paul's Church, Shipley, Yorks, Arthur Ivan Granville McLaughlin, M.B. Sydney, M.R.C.P. Lond., to Rose Catherine, only daughter of the late Dr. B. P. Viret, of Bradford, and of Mrs. Viret, of Shipley.

DEATHS

EDWARDS-JONES.—On March 8th, at Wrexham, Samuel Edwards-Jones, L.R.C.S. Edin., J.P., for Denbighshire, aged 65.

FOTHERGILL.—On March 8th, at Edinburgh, Dr. Alan Armour Fothergill.

GOLDSMITH.—On March 3rd, at Cheltenham, Surg. Maj. Septimus Jesse Goldsmith, M.R.C.S. Eng., I.M.S., retd., aged 84 years.

LEGGATT.—On March 6th, at Ashley Mansions, S.W., Ashley Leggatt, M.D. Edin., late of Walton-place, S.W., and of Balblair House, Beauly, Inverness-shire, aged 73.

PARNIS.—On March 8th, after an operation, Henry William Parnis, B.Sc., M.D. Malta, M.R.C.S. Eng., D.P.M., of Bexley, Kent, eldest son of Judge and Mrs. Parnis, Malta.

PATTERSON.—On March 5th, at Addiscombe, Surrey, of pneumonia, C. S. Patterson, M.B. Edin., of Lambourn, Berks.

TIDBURY.—On March 4th, at Hilldrop-road, N., Robert Tidbury, M.D. Q.U.I., aged 87.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

MALARIA PROPHYLAXIS

IN a letter in our present issue, Lieut.-Colonel S. P. James, F.R.S., replying to a letter by Dr. Lyndhurst Duke, refers to the following passages in a *Quarterly Bulletin* of the Health Organisation of the League of Nations, now out of print.

The Problem of Clinical Prophylaxis

In "clinical" prophylaxis no attempt is made to prevent infection. It is admitted that the parasites have established themselves and are continuing their life cycle in the human host; what is aimed at is to prevent them from causing fever and other clinical symptoms of malarial disease. There is a fundamental difficulty in accomplishing this object, at any rate in persons who have never previously suffered from a clinical attack of malaria, because observations in induced malaria have shown that quinine has little or no action *until a febrile attack is imminent or has already occurred*. This is evident from the examples already recorded . . . . in which it was shown that large doses of quinine given daily during the incubation period had no effect in preventing the onset of the primary febrile attack, even when the daily dose was continued up to and including the first or second day of fever. This is a paradox which, at present, cannot be explained. Quinine exhibits precisely the same lack of therapeutic action when it is given during the fever-free and parasite-free period just before the onset of the type of relapse known in England as a "recurrence" (the type in benign tertian malaria which occurs usually about eight months after infection). Thus it has to be admitted that with quinine we cannot entirely prevent the occurrence of fever in persons already infected, because quinine does not begin to exert its therapeutic effect until fever has occurred or is on the point of occurring. The paradox is sometimes expressed from the parasitological viewpoint by saying that quinine has no action until the number of asexual parasites in the blood is sufficient to cause fever or is sufficient to enable them to be found by routine methods of microscopic blood examination.[1]

With these observations in mind, clinical prophylaxis is correctly defined as being a procedure for curing slight clinical attacks of malarial fever—it is a curative, not a prophylactic measure.

Since the introduction of the practice of malaria-therapy, it has become possible to test various systems of clinical prophylaxis under controlled conditions and to compare their respective merits in known circumstances of repeated infection and reinfection. Trials of this kind have been conducted in England on persons who were to undergo a course of malaria-therapy. The persons were bitten twice or three times weekly during a period of from five to eight weeks by mosquitoes infected with *P. vivax*, and they were given prescribed doses of quinine daily or weekly during the whole period. The results showed that:—

(1) Persons who were infected by mosquito bites twice or three times weekly, and who took each day a dose of 0·3 g. (5 grains) quinine bihydrochloride had a mild attack of malarial fever between 10 and 14 days after the first infection, but the attack lasted only from two to four days. Then they remained free from fever for about two weeks, when another minor attack occurred. Afterwards they had similar mild attacks (lasting one or two days only) at irregular intervals. A few days after ceasing to take the daily prophylactic dose, they developed a severe attack with quotidian paroxysms of fever and many parasites in the blood.

(2) Persons infected in the same way but who took as a prophylactic only a large dose of quinine (1 g.) once a week had more severe and more frequent febrile attacks than the persons who took a daily dose of 0·3 g., and this system of clinical prophylaxis could not be regarded as a satisfactory plan. A few days after the doses were stopped, the persons developed the disease in the same way as happened in persons who took a daily dose.

Similar trials were conducted in Italy by D. Ottolenghi and Brotzu on patients treated by quinine and bitten once or several times by infected mosquitoes. With quinine varying from 40 to 60 cg. a day or 1 g. twice a week, they prevented the occurrence of the attack during the whole course of treatment, which was sometimes continued throughout the whole malaria season. In some cases the treatment was successful in preventing any manifestation of malaria. Only in a few cases did it fail.

The first type of experiment—that in which persons take a small dose daily—has recently been repeated with the administration of a small dose of atebrin instead of a small dose of quinine. So far as can be judged from the results of this test in three persons who were repeatedly bitten by infected mosquitoes over a period of six weeks, it appears that a daily dose of only one tablet (0·1 g.) of atebrin is more effective in keeping infected persons free from fever and other clinical symptoms than is a daily dose of 0·3 g. (5 g.) of quinine. Atebrin seems, in fact, to have the advantage over quinine that it appears to be capable of suppressing the parasites almost before they reach the number required to produce fever. Of course, before testing atebrin as a clinical prophylactic on a large scale under natural conditions in malarious places, it should be ascertained whether or not the daily administration of the drug in the clinical prophylactic dose (0·1 g.) over a long period would have a harmful action. It is known, of course, that, even with this small daily dose, the skin becomes yellow. This is due to the dye which the preparation contains. The coloration is not harmful, but would doubtless be regarded as a sufficient reason for not using this drug as a clinical prophylactic. It must be remembered, too, that (as was shown in section 1 of this chapter) atebrin, even when given as a prophylactic in clinical curative doses, will not prevent infection. For this reason, even when the daily prophylactic dose is continued for a long time after the last possible date of infection, it cannot be guaranteed that the person will remain free from a clinical attack after leaving the infected area. A patient at Horton who continued to take the daily prophylactic dose of one tablet of atebrin for 15 days after the last date of infection, and was then discharged from the hospital (her mental disease having been cured), returned three months later with a severe malarial attack.

Field trials.—The wide experience of the Italian school, and of Celli particularly, show that clinical prophylaxis is a valuable measure in endemic areas. It is particularly useful in localities where skilled medical attention cannot be obtained quickly—as, for example, in areas where there is only one doctor to a population of forty or fifty thousand, many of whom are permanent carriers of malaria parasites. *In such areas the antimalarial remedy used for general distribution must be known to be quite harmless.* Sufficient experience of the use of the new synthetic preparations in the field has not yet been obtained to justify placing them in that category so, *for the purposes of clinical prophylaxis in general*, we must continue for the present to rely upon quinine. The Commission is of opinion that the best method of using quinine for clinical prophylaxis is to take a dose of 40 cg. daily. The daily dose should be taken

[1] The term "routine methods" is used advisedly, because (by unusually thorough examination) Korteweg and others have succeeded in finding parasites during the incubation period—that is, during a period when quinine has no therapeutic effect. About the failure of quinine in relation to fever, Swellengrebel reports that, in persons who have never previously suffered from malaria, quinine has no action in the primary attack until the end of the period of "initial fever" defined by Korteweg.

throughout the period of the year during which infections occur and for several months after the last possible date of infection. The practice of the Algerian Anti-Malaria Service is to distribute the daily dose of 40 cg. of quinine hydrochloride in the form of two sugared pills. For children from 4 to 12 years of age the dose is one pill (20 cg.). For babies the dose is 5 cg. for each year of age, the pills being coated with chocolate. The doses are distributed by a responsible (but unofficial) agent under the supervision of a medical officer of the Colonial Service. Details of the procedure and of the results obtained will be found in articles by the brothers Sergent, L. Parrot, H. Foley, and A. Catanei referred to at the end of this report. The subject will be mentioned again . . . but the following summary may be given of an article by the brothers Sergent describing how the danger of malaria in the French Army in Macedonia was overcome by the proper use of quinine. The summary, by Dr. William Fletcher, is reproduced from the *Tropical Diseases Bulletin*, vol. xxx., No. 2, 1933 :—

"The army disembarked at Salonika in the autumn of 1915. Ross, Laveran, and others gave clear warning, in January and February of 1916, that severe malaria would be experienced unless timely precautions were taken ; but, although plans were made and orders were issued, the ignorance of the officers, of the common soldiers and even of the doctors, prevented their proper execution. The authorities charged with the application of prophylactic measures mocked and laughed at them ; were they not the dreams of doctors haunted by an *idée fixe* ? One hospital where proper precautions were taken, and which was properly screened, was regarded with ironical contempt. Perhaps more important than all, the medical officers did not know how to give quinine, and they did not believe in it. The result was disaster. In 1916, there were some 60,000 cases of malaria, in a force of about 115,000 men. In the autumn, there were not more than 20,000 men in the line. General Sarrail reported to the Government that his army was immobilised in hospital. In January, 1917, the authors were sent out to investigate and to draw up a plan of action. They decided that antilarval measures on a large scale were not expedient for the protection of an army in temporary occupation of a country, and they recommended quinine prophylaxis rigorously applied. Minute details were given as to the way it was to be given under personal supervision ; everyone was to take quinine every day, not as a medicine, but as a ration ; refusal to take it was to be regarded as a refusal to obey orders in the face of the enemy. (The quinine was in tablet form.) A special antimalaria service was created, whose chief duty was to see by testing the urine with Tanret's reagent, that quinine was being properly given in the different units. The responsible officer was punished, not the private soldier, when the tests were unsatisfactory. Vigorous propaganda was carried out.

"The result was success, and the army was saved. A chart shows that, whereas in 1916 the malarial peak, in September, was reached with 8000 primary cases (four divisions), in 1917 with eight divisions the peak did not exceed 1000 primary cases. In 1916, there were 379 deaths from malaria ; in 1917, 71 ; in 1918, 54. Tanret's reaction showed that only about 15 per cent. of the men were taking their quinine in 1916, but by 1918 nearly 100 per cent. were taking it. The German army, on the same front, which had no special antimalaria organisation, served as a control, and they had much more malaria in 1917 than in 1916."

Summary

The Commission believes that, when it is not considered justifiable or practicable to prescribe a system for the prevention of relapses which is based on the above principles, the best practice is to adopt a system of "clinical prophylaxis" consisting of the administration of a small dose of quinine (0·4 g.) daily throughout the period of residence in the malarious country and for several months after leaving it. This course should be begun about a week after cure of the primary attack. It is claimed for this system (*a*) that it protects individuals against serious attacks ; (*b*) that, because it does not entirely eradicate the infection, the defensive mechanism of the body is continuously at work and becomes increasingly powerful as time goes on ("acclimatisation without risk") ; (*c*) that it reduces the number of gametocyte-carriers and their capacity for infecting mosquitoes ; (*d*) that it enables troops and agricultural and other workers to carry on their daily tasks.

MASSAGE WITH VIBRATION

AN electric vibrator worked from the main, which can be fitted to the hand of the masseur, has recently been put on the market by Cahier's Electric Vibrator Co., whose London address is 31, Alfred-place, S.W.7. The percussion point is adapted to, and worn on, the back of the hand, with a sponge-rubber intermediary, and consequently the operator can give ordinary massage or manipulations as usual with the vibrator added. The manufacturers claim chiefly that more effective treatment all over the body can be achieved in a given time, the stimulation of the circulation of blood and lymph being much greater than with ordinary massage ; moreover, the operator is not so fatigued, and can take more patients in the day. Where time is a factor, the instrument has obvious advantages ; especially in the treatment of cases of chronic arthritis, of fibrositis, or of obesity, it may prove to be of great value. We understand that the strength and rapidity of the vibration can be modified at the discretion of the masseur. Time will show whether the weight of the little motor on the hand causes enough inconvenience to detract from the popularity of the apparatus among masseuses, but reports received by the manufacturers from operators of both sexes appear to be very favourable, and it is already in use in several hospital departments. The apparatus is sold only to members of the medical or massage professions.

NEW PREPARATIONS

"HYPOLOID" CALCIUM LÆVULATE.—Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C.1, have introduced "Hypoloid" calcium lævulate in ampoules to meet the demand for a calcium product for injection in cases where calcium therapy is indicated. It contains 14·8 per cent. of calcium and is non-toxic in therapeutic doses. "Hypoloid" calcium lævulate is indicated in the treatment of tetany, in the vomiting of intestinal obstruction, in cœliac rickets, and as a pre-operative measure in various surgical operations. It is issued in boxes of 5 ampoules, each containing 1 g. of calcium lævulate in 10 per cent. solution.

CALSIMIL.—This new preparation, made in England by the British Drug Houses Ltd., is in the form of a tablet containing grs. 5 of calcium sodium lactate and 500 international units of pure crystalline vitamin D (Radiostol). A pamphlet which accompanies the preparation sets out the physiology of the absorption of calcium, and quotes an American authority to the effect that the actual daily requirement of calcium for adults is 0·45 g. (for children between the ages of 3 and 13 years it is about 1 g.), but this represents the minimum of actual need rather than the normal allowance. On account of the extra demand of the fœtus a supply in excess of this figure is necessary during the period of pregnancy ; also during lactation and during childhood there is need for an excess over the usual requirements. Calsimil is recommended on these grounds for exhibition in many conditions of lack of muscular energy due to decreased calcium retention. It is stated to be found valuable also as a promoter of fœtal growth and in the malnutrition of children.

Dr. H. C. H. Bull, whose book on X ray interpretation was reviewed in our last issue, is physician and hon. radiologist to the Royal Waterloo Hospital, London, and hon. radiologist to the Southend-on-Sea General Hospital.